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THE millipedturreto mania is a free translation of the title applied by the *Moniteur Industriel* to an epidemic that, originating in France, now threatens to overwhelm Belgium and other exhibition building countries. The worst feature the French papers seem to see about the spread of this mania to Belgium is that, as the Brussels Exhibition, where the Belgian engineers propose to erect a 1000-foot high wooden tower, comes in 1888, their own Eiffel tower, although constructed of iron, will lose its originality and become hardly better than a copy of their little neighbor's previous exhibit. The Belgians, instead of striking out for any new architectural design, evidently propose, from the descriptions published of the contemplated structure, to stick to the oil-well derrick as the most æsthetic type of the tower of the future. England too has been struck by the mania, and is to build a stone tower to commemorate the jubilee year. Just what it is that has given rise to this high pole craze it would be hard to say, unless it is a Gallic manner of expressing the same thing as Bismarck's big armies and Krupp's big guns.

THE new French explosive "melinite," the power of which is said to far exceed even that of nitro-glycerine, is not by any means the only discovery of the kind lately made in Europe. Germany has her secret powder, "roburite," claimed to be perfection, both as to power and safety of carriage. Mr. A. NOBEL, the inventor of dynamite, comes also to the front again with a mixture of metallic salts, nitrates, chlorates, or perchlorates, with one of the nitrate compounds of glycerine or cellulose. He claims for his mixtures that they are entirely free from danger of spontaneous combustion, and can be handled and transported without fear of accident.

Mr. KARL LAMM, director of the large manufactory of explosives at Stockholm, has come out with a compound of nitrate of ammonia and di or trinitrobenzine. This compound he names "bellite," and claims for it the greatest explosive power of any compound yet invented. It explodes only on actual exposure to flame or intense heat ; but blows of any kind do not affect it, and its carriage and handling are, therefore, perfectly safe. It has been established by a long series of experiments to have an explosive power 35 times greater than ordinary black powder, and 15 per cent greater than the best gun-cotton.

ALUMINIUM.*

Few discoveries in modern chemistry have excited more general interest than that of the extraction from ordinary clay of a metal which, by whiteness, brilliancy, resistance to tarnish, strength, malleability, and great lightness, as compared with the hitherto well-known metals, seemed to render it peculiarly fitted for many purposes in the arts, and caused aluminium to be hailed as "the metal of the future." Hence it is that, since 1854, HENRI SAINTE CLAIRE DEVILLE having succeeded in producing this metal in such quantities that it could be successfully wrought, the attention of many chemists and metallurgists has been turned to its more economic production. The attempts to get it directly from alumina, its only oxide, by the reducing action of carbon, as iron, zinc, tin, lead, and copper, and even potassium and sodium, are reduced from their respective oxides, have, until very recently, proved unsuccessful, and its extraction from the native double fluoride, cryolite, or from the artificial chloride, in both cases by the intervention of metallic sodium, has been the only available method.

A guide to our knowledge of the properties and mode of production of this metal was much needed in technical literature, and this want Mr. JOSEPH W. RICHARDS has endeavored to supply by his lately published volume, now before us, in which a great number of facts relating to the history and mode of production of aluminium, its properties, and those of its alloys, have been brought together, making a very useful compendium. In his desire to gather information on the subject, the writer has embodied the claims of many would-be inventors, whose pretensions are, to say the least, among the curiosities of technical literature.

The hitherto generally followed method of producing pure aluminium by reduction of its chloride by sodium is set forth in considerable detail, and the new and ingenious process of CASTNER, already described in our columns, by which the cost of producing sodium appears to be greatly cheapened, is fully described in this connection. Electrolysis, as applied to the decomposition of the fused aluminium chloride, is also explained, and the various more or less questionable plans for obtaining aluminium by the electrolytic decomposition of solutions of aluminous salts are described. Some of these have probably no better foundation than that of an ingenious novice, examined by the present writer, in which an acidulated solution of alum, with an electric circuit and an anode of metallic tin, effected a dissolution of this and its deposition at the cathode, where it was taken for metallic aluminium.

The remarkable invention of the Brothers COWLES, of Cleveland, in which the intense heat of the electric current passing through a resisting medium is made a means of directly effecting the reduction of alumina by carbon, and the production on a commercial scale of valuable alloys thereof, is explained at some length. The accounts of this by Prof. CHARLES F MABERY and by Dr. T. STERRY HUNT, already familiar to our readers, are freely laid under contribution. The latter has just called our attention to a statement attributed to him in this volume (pages 196 and 303) that the Messrs. COWLES have obtained "a compound of aluminium and nitrogen." This arose from the mistake of a reporter at the Washington meeting of the National Academy of Sciences, in April, 1886, whereat Dr. HUNT referred to a product got by attempting the reduction of titanic oxide in the COWLES furnace, which was conjectured to be a compound of titanium and nitrogen, such as is well known to be easily formed at elevated temperatures.

It may here be added that the operations of the large dynamo of 500 horse-power at the new works of the Messrs. COWLES, at Lockport, New York, have been so successful that two others of the same size are said to be in process of construction, and moreover, that the production of pure aluminium by their process seems no longer a problem ; although the demand for aluminium bronze is such that its fabrication engages the chief attention of the manufacturers.

The curious and varied information regarding aluminium presented in

* *Aluminium : its History, Occurrence, Properties, etc.* By Joseph W. Richards. Philadelphia : Henry Carey Baird & Co. 1887. 12mo, pages xx+346.

the volume of Mr. RICHARDS is sufficient to show how wide a prospect is still offered by the many alloys of this metal; and the cheaper production of these already effected by the process of Messrs. COWLES, as well as the possibilities offered by improvements of the old method by cheapening the price of sodium, are such that scientific inventors have still an important and most inviting field of labor before them. We hope that Mr. RICHARDS will soon find a new edition of his volume called for, and that he will see the desirableness of a critical revision of some portions thereof. Notwithstanding its defects, however, he has rendered to the public a valuable service, and we trust to hear from him again on the subject of aluminium.

THE METAL INDUSTRY OF THE WEST.

The disposal to be made of our surplus metal production is a problem demanding solution more and more imperatively every year. We have the materials from which and the appliances with which to make far more iron and steel than we can possibly consume; but the low price of pig-iron and steel blooms and rails abroad induces our manufacturers to combine and restrict production to consumption. When such artificial contrivances fail, we shall enter the market of the world as one of its largest contributors; but our contribution, so far from being in pigs and blooms, will be in the most highly specialized form of the manufactured article. The ingenuity that our high-priced labor, among other causes, has stimulated in devising machinery to replace manual skill, and the freedom from prejudice and bias, which allows our manufacturers in all branches to adopt new designs and to adapt their productions to the varying demands of the most diverse customers, will compensate for the disadvantages of somewhat dearer labor and raw material.

But while we do not yet export iron and steel to any great extent, we are, with one exception, the largest contributor of copper to the factories of Europe. And as the forced methods that have availed to render the duty operative in raising the value of iron and steel have not been so successfully resorted to by the copper producer, the price shows a tendency to constantly revert to the world's standard. Yet, despite the low price, a very large proportion of the country's surplus is exported in the form of matte. It is not even reduced to the metallic state. Thus, the foreign importer receives the smelter's profit, and the manufacturer's to boot. Our rise from a position of dependency to one of supremacy in the copper market has been so rapid that there has not been time for that perfect adjustment of the machinery of trade to altering circumstances that will come about in time. When it is effected, the result will be, we apprehend, that our copper will be exported altogether in finished wares. Our copper and brass goods, whether rolled sheets, stamped cartridges, or seamless tubes, are the admiration of even our foreign rivals. Our brass and bronze castings compare favorably with those of France. Were we to send into the European markets the copper that we must export, with the stamp of our ingenuity and excellent workmanship upon it, we should be in a still better position to hold our own against the world's competition, than when we consent to share what little profit there may be with the foreign smelter, rolling-mill, or foundry.

There is, besides the European, a large Eastern market that England has heretofore occupied without opposition. The English Board of Trade statistics show the export of copper to India—largely in India sheets—to be 26,000 tons. Butte, Montana, on the Pacific slope of the Rocky Mountains, sends to England annually about 15,000 tons of copper. It seems a waste of labor and of money to haul matte to the Atlantic seaboard from the Pacific slope, ship it to England, in order there to roll it into sheets, which we could as well do ourselves, and then to return it to the Pacific.

Within easy range of Butte, is more than one locality where the essential requisites of a general metallurgical industry, namely, coal and labor, exist. Ogden, at the southern terminus of the Utah & Northern Railroad, is almost within the Wyoming coal-field. Steady, sturdy Mormon labor is abundant, good, and cheap; and the profusion of agricultural products from the Great Basin makes living both economical and agreeable. It is the center whence radiate six lines of railroad, which would draw directly from every territory of the Rocky Mountains except Arizona, every ore of every metal that our great West yields. Thither, it would seem, should be accumulated, for reduction and manufacture, some of our minerals, to be thence distributed to the nearest foreign market, *Asia*. But still nearer Butte to the north, there are perhaps even more favorable seats of future metallurgical industry. The great falls of the Missouri might be made subservient to Montana mines. They have carved their channel out of carboniferous rocks, which inclose large beds of good coking coal; and in Oregon, there exists also every element out of which to build up a thriving industry in metals—concentric railroad transport, exuberant water-power, excellent coal and coke, and a prosperous agriculture, which always means, sooner or later, good and thrifty labor.

Heretofore, arbitrary railroad rates, made to favor certain Eastern points, have militated against Western metallurgy. This is one of the recognized evils against which the Interstate Commerce Bill is directed. This measure may not have accurately hit the mark; but it, or an amended measure, if not a sense of their true interests by the railroad companies, will before long remove this incubus. And the large mining companies will be driven to adopt more business-like methods. The time has already come when the extravagant hopes of exorbitant profits are being dropped from their calculations. They will look for their gains to economies heretofore neglected and despised. Among these economies, will, we venture to predict, be the encouragement of metallurgical works and mills near the sources of the raw materials, and the distribution thence to the best markets, be they in Asia, Europe, or our Eastern or the Western seaboards, of the manufactured metals.

VALENTINE'S STATISTICS OF PRECIOUS METAL PRODUCTION.

The following is a copy of the annual statement of precious metals produced in the States and territories west of the Missouri River (including British Columbia, and receipts by express from the west coast States of Mexico) during 1886. As stated hitherto, the facilities afforded for the transportation of bullion, ores, and base metals, by the extension of railroads into mining districts, increase the difficulty of verifying the reports of the products from several important localities; and the general tendency is to exaggeration when the actual values are not obtainable from authentic sources; but the aggregate result, as shown herein, we think may be relied on with reasonable confidence as approximately correct:

STATES AND TERRITORIES.	Gold dust and bullion by express.	Gold dust and bullion by other conveyances.	Silver bullion by express.	Ores and base bullion by freight.	Total.
California	$12,579,356	$628,678	$918,403	$563,948	$14,690,385
Nevada	1,739,959	.....	5,502,596	1,927,365	9,169,920
Oregon	451,907	250,000	1,310	.....	703,217
Washington	139,694	25,000	.....	.....	164,694
Alaska	394,975	50,000	.....	.....	444,975
Idaho	1,816,500	300,000	2,602,000	3,015,000	7,733,500
Montana	2,100,000	500,000	7,840,000	10,400,000	20,840,000
Utah	19,140	.....	3,080,759	5,531,696	8,631,595
Colorado	3,500,000	.....	5,750,000	15,750,000	25,000,000
New Mexico	164,784	50,000	279,909	3,387,178	3,821,871
Arizona	583,827	100,000	1,371,083	4,048,468	6,103,378
Dakota	2,405,250	200,000	251,437	.....	2,856,687
Mexico (West Coast States)	469,490	.....	1,627,204	12,000	2,108,694
British Columbia	692,845	50,000	.....	.....	742,845
Total, 1886	$26,997,727	$2,153,678	$29,224,701	$44,635,655	$103,011,761
" 1885	25,050,238	.....	29,399,311	35,731,711	90,181,260

The gross yield, segregated, is approximately as follows:

	Per cent.	1886.	1885.
Gold	29·87	$30,773,759	$26,393,756
Silver	52·21	53,776,055	44,516,590
Copper	9·00	9,276,755	7,838,036
Lead	8·92	9,185,192	8,562,991
Total		$103,011,761	$90,181,260

PRODUCT OF GOLD AND SILVER IN THE REPUBLIC OF MEXICO FROM 1877 TO 1886.

Year.	Gold.	Silver.	Total.
1877-1878	$661,385	$21,451,785	$22,113,170
1878-1879	662,524	21,405,330	22,067,854
1879-1880	474,632	23,383,448	23,858,080
1880-1881	380,301	23,583,135	23,963,436
1881-1882	382,752	24,009,525	24,392,277
1882-1883	380,419	22,921,921	23,302,340
1883-1884	420,000	24,240,000	24,660,000
1884-1885	385,000	25,037,356	25,422,356
1885-1886	450,000	26,000,000	26,450,000
Total	$4,197,013	$212,032,500	$216,229,513

Arc or Incandescent, in 1834?—Arago, in his *Éloge* of Alexander Volta, of which a translation appears in the *Edinburgh Philosophical Journal*, January, 1834, has the following passage: "Pieces of charcoal, fitted to the two extremities of the same wire, kindle as soon as they touch each other. The light they diffuse is so pure, sparkling, and remarkable for its whiteness that we should not surpass the limits of truth by calling it the solar light. The charcoal attached to the two wires of the pile become, in fact, incandescent in a perfect vacuum. Nothing, therefore, can be incorporated in their substances and nothing appears to emanate from them. At the close of an experiment, however long continued, the pieces of charcoal are found to be the same in nature *and in weight* as before it began."

A Sulphur Sal-Ammoniac Battery.—This has been invented by Mr. Sydney F. Walker. It is exactly similar to the Leclanché, except that, in place of the oxide of manganese used as a depolarizer, pure sulphur, in pieces the size of a pea or small bean, is used. Its electro-motive force is a trifle below that of the porous cell of Leclanché, while its resistance is considerably less. The internal resistance and life of the cell can be varied within large limits by alternating the proportions of sulphur and carbon employed. More sulphur gives a longer life for a given work, and higher resistance, and *vice versa*. In the working of the battery, sulphureted hydrogen (H_2S) is formed, but does not come away unless the battery is worked very hard, or is nearly worked out. When quite worked out, a yellow substance, some compound of sulphur, exudes through the ventilating hole at the top of the cell, so that there can be no mistake as to which cell requires attention.

NEW ELECTROLYTIC TREATMENT OF COPPER ORES CONTAINING LEAD AND SILVER.

Mr. Eugene Marchese, an Italian engineer, has lately introduced and described, in the *Revue Universelle*, an improved method of separating, by electrolysis, the copper from lead and silver compounds or mattes, by using anodes of the metallic sulphides prepared from the substance to be treated. The decomposition of the iron sulphides of the anodes, in their transformation into ferric sulphates, adds the electro-motive force generated by this oxidation to that already developed by the dynamo or battery used. The improvement consists in maintaining a continual circulation of the solution obtained by lixiviation of the roasted ores between the anodes and the lixiviating vats, whereby the electrolyte continually absorbs new metal.

The following is a description of the process: The ores containing the copper and the argentiferous galena are generally accompanied with gangue matter, more or less soluble in acids. In this case, the mass is melted in the crude state without any previous roasting. This operation produces a species of matte in which are concentrated the copper, lead, silver, iron, and sulphur contained in the ore, the metals being present in the state of sulphides. An average sample is then taken and the exact contents in iron and copper are determined. This done, one portion of the charge is cast directly into slabs to be used for the anodes, and the remainder of the charge is granulated and then roasted. The proportion of the cast slabs to the whole remainder of the roasted charge is so arranged that they contain in weight of iron two equivalents of this metal for every three equivalents of copper contained in the matte to be roasted; or, in other words, that the slabs shall contain six parts by weight of iron for every ten parts by weight of copper contained in the remainder of the charge. The object of the roasting is to oxidize the copper salts, which are then treated with dilute sulphuric acid, furnishing a solution of sulphate of copper with some sulphate of iron. This solution serves as the electrolyte. The special novelty of this process consists in the attacking of these anodes by the electrolyte, the iron being corroded by the copper solution. This action generates an electro-motive force, which, added to that supplied by the dynamo or other generator, permits the use of a much feebler machine than would be required if the solution of cupreous sulphate had to be decomposed between electrodes that would not be attacked by the bath. In casting the plates for the anodes, a copper wire is suspended in the molds so that connection of each plate is easily made with the circuit wire. The anodes are set vertically to the number of 15 or 20 in appropriate vats; they rest on cross slats fixed from 6 to 8 inches above the bottom. Between each anode, is placed a copper plate acting as cathode.

The sulphuric acid required would in general practice be obtained in the ordinary manner from the sulphurous gases generated in roasting the ores.

One main condition of this process is the continual circulation of the electrolyte between the electrolyzing and the lixiviating vats. When the electric current is turned on, the copper of the anode is deposited on the cathode, while the iron attacked is changed to sulphate of iron. The electro-motive force developed by these reactions is utilized in the decomposition of the sulphate of copper in the liquid and its deposition on the cathodes. As the liquor loses its copper salt, it is repassed over the roasted ore, again taking up the copper from the latter, to be again deprived of it by the cathodes. In this manner, practically the whole copper is extracted.

The precipitates that form at the bottom of the vats contain free sulphur, oxides and sulphides of iron, lead, and silver, also occasionally a small percentage of copper oxides. In cases where these latter are still present in such an excess as to interfere with the subsequent smelting of the silver lead, these precipitates should again be roasted and lixiviated in conjunction with a new charge.

THE MANUFACTURE AND COST OF COKE.

Written for the Engineering and Mining Journal by F. Koerner, M.E.

In one of his annual reports, Dr. Angus Smith says, "The present mode of making coke in England has all the appearance of roughness and savagery which extravagance always produces." There is no good reason why this stricture should be limited to England. It applies to all districts where the old bee-hive oven is in use. To become quite conscious of the justness of Dr. Smith's dictum, one need only approach a district in which the venerable bee-hive rules supreme. The atmosphere for miles is redolent with hydrogen sulphide, sulphurous acid, and unconsumed hydrocarbons, or else one sees the latter valuable heating material burning with a long flame at the top of the ovens, doing the least possible good to the process.

In the anthracite regions, we have reduced the cost of handling our material, other than mining, from 18 to 35 cents a ton in 1856 to from 3½ to 7 cents a ton in 1886. It is far otherwise in the coke region. There—with the exception of improved colliery machinery for hoisting—we are where we were in 1856. We draw the coke *by hand*, after squirting cold water into and on to the hot masonry. The coke is stocked *by hand*, or loaded into cars *by hand*, or both. We mine valuable coking coal at a loss of at least 30 per cent in pillars. True, some of these pillars may be, and are, afterward removed; but the coal has lost its coking quality. We are doing this (with a few exceptions) when the removal of nearly all the coal would cheapen the cost of mining and make the application of machinery for this purpose much more feasible. This more rational mining would also simplify ventilation and avoid danger to life and property to a very great degree. We waste the ammoniacal compounds, which, according to the best authorities, are worth about $1 per ton of coal in England; at even fifty cents a ton, they would be worth saving, and would soon create a market for themselves here, if there is none at present.

Persons not familiar with the subject will, of course, ask, "Is all this possible? Why are we, recognized as *the* nation to invent and adopt improvements, so backward in this respect?" The answer is easy enough. The coke industry has reached its present proportions in the ten or a dozen years past. We have been in a desperate hurry. The bee-hive oven is easily built, and makes good coke of most American coking coals. The coal is cheaply mined, and the loss of carbon was not regarded or was ignored. The knowledge of better processes was confined to a few, and others regarded improved ovens as in a state of experiment. Those who did try them omitted to adapt them to changed conditions, and failures were the inevitable result.

Much of all this is changed. Improved ovens, which almost work up to calculated results, are in daily use in France, Belgium, and Prussia. They are making headway in England, even against furious opposition on the part of those who have heavy investments in old plants; and there is nothing singular in this opposition; we have seen it in other cases.

There is not the slightest difficulty in saving $1 a ton on pig-iron by adopting a rational, improved, and, in other industrial districts, perfectly successful process to make cheaper coke. But the cheapening of coke reaches still farther. It will influence the price of steel, castings, and machinery. Coke is becoming the standard fuel for cupola use, even in the anthracite region, and many of our anthracite blast-furnaces find it pay to use a portion of coke with anthracite.

When we approach a plant of retort ovens, nothing offends sight, nose, or our sense of the eternal fitness of things. The gases, instead of escaping and poisoning the neighborhood, are used to distill the coal; and while only small efforts are made in Europe to supply labor-saving apparatus, we still feel at once that we are not in the region of "savagery," as Dr. Smith aptly calls it, but in the presence of practical science, economy, and thought.

It has been said that the improvements in coke-ovens on the continent of Europe arose out of the difficulty of coking lean coals in the bee-hive oven. Nothing is more erroneous. While it is true that the older forms of retort ovens were built for this purpose, it is equally certain that the later ovens, such as Coppée's, Appolt's, Von Bauer's, and Carvès's, were first designed, gradually improved into their present shape, and modified to suit varying conditions, from a clearly defined conviction of the wastefulness of the bee-hive, and the necessity of saving every thing that could be saved.

It has been estimated by Von Tunner that the cost of the raw materials from a ton of pig-iron in Germany, Belgium, and France exceeded that of England by at least 10 per cent. To remain capable of competing with England in their respective countries, engineers were *forced* to study economy in all processes, and in the production of coke especially, and the results of their labors are plain to every body who will dispassionately examine them.

We have aimed, or at least ardently desired, to create an export trade for iron and its manufactures. If we will reform our wastefulness in the manufacture of coke, it will bring us a long step nearer to our object.

The figures given in my first article in the JOURNAL of October 23d, 1886, relating to waste in coking, have now been almost three months before the American engineering world, and have not been disproved, and must therefore be considered as substantially correct. In a general way, it has been attempted to belittle them, without giving reliable figures to disprove them.

It has been claimed that the bee-hive oven alone made good blast-furnace coke, because various attempts with other ovens had failed. I have shown that these failures have arisen, not from the superiority of the bee-hive, but from the want of knowledge on the part of those who tried other ovens, and, in some cases, from applying retort ovens to the manufacture of coke from coal that can never be used for coke under any circumstances.

The testimony as to the superior economy of the better sort of retort ovens is overwhelming; equally so, that certain inferior coking coals (inferior in coking, but not inferior as fuel) can be made into excellent coke; in fact, that the quality of the coke as a fuel for all purposes is in a large degree within our power.

WILKES-BARRE, PA., Jan. 15.

The Almaden, the Richest Quicksilver Mine in the World.—In eight months of 1886, the Almaden mine, Spain, produced 51,199 flasks of quicksilver, which is 21,218 flasks more than were produced by all the quicksilver mines in the United States in the whole year. In the month of February, the highest limit was reached, 7668 flasks, and in no month did the production fall below 2568 flasks. We give the details: January, 6464; February, 7668; March, 7395; April, 7184; May, 5737; October, 2568; November, 6566; December, 7627. The value of this product at £7, or say $35 per flask, was $1,800,000.

Facts Established by a Florida Artesian Well.—An artesian well is boring in St. Augustine, Florida. The well, which is twelve inches in diameter, is said to be the largest artesian well in the world, and by actual measurement flows at the rate of 7,000,000 gallons a day. The hole is now 760 feet below the surface, and is deepening every day. The old-fashioned opinion that Florida was a coral reef has of late years been vigorously disputed. The boring of this well proves that an immense depth of coral underlies the State. Samples of the material have been saved at every stage of the boring. Another interesting fact is that, the deeper the well is drilled, the higher the temperature of the water becomes. It is now about 80 degrees Fahrenheit.

Phosphate Deposits of Beauval, France.—The deposit of phosphate of lime discovered about three months ago near Beauval, in the department of the Somme, has proved to be remarkably rich. This deposit had really been located some twenty years ago; but so little attention was then given to its value that, until very lately, these phosphates were sold in the neighborhood as common building sand. Recent complaints having been made about the quality of the sand, one of the owners of the bed took it into his head to have the material analyzed, and then discovered that he owned a perfect bonanza. The analysis of these phosphates shows them to contain 67·43 per cent phosphate of lime, 4·60 per cent carbonate of lime, 3·26 per cent fluoride of lime, and 1·43 per cent sulphate of lime. The deposit of sand seems to cover the whole of the clay beds of the Beauval District, and varies in thickness from a few inches to 30 and 36 feet. It also fills all the cavities on the surface of the clay. Under the microscope, it shows itself full of shells and infusorial remains. It weighs about 66 pounds to the cubic foot.

THE COPPER ORES OF THE SOUTHWEST.*

By Arthur F. Wendt, New York City.

The earliest knowledge of copper ores in the Southwest was derived from the Mexicans, who, in the latter part of the last century, discovered and worked the Santa Rita copper mines, now situated in the territory of New Mexico, near the Arizona line and the town of Silver City. Don Francesco Manuel Elguea, of the city of Chihuahua, is said to have operated these mines at great profit, leaving at his death in 1806 a large fortune. After the death of Alguea, the mines were worked under lease from his family. The Mexicans called these mines *Criadera del Cobre*, "the place where metallic copper was created." The native metal of these mines cropped out above the ground; and masses weighing up to a ton were extracted by these early miners and shipped overland, through a hostile Indian country, to the City of Mexico, there to be coined into copper money. About the year 1838, the Apache Indians, by frequent and continuous attacks, brought this mining industry to a stand-still; and the mines remained idle until the advent of the Americans in 1865. From 1865 to 1870, a large number of Americans poured into this region; and in 1873, the first work was again done on a systematic scale on the old Santa Rita property. The subsequent history of the property will be again referred to.

In 1865, Colonel Carleton's regiment of California volunteers, while in pursuit of the Indians, first discovered what is now the Copper Mountain or Clifton Mining District, in Graham County, Arizona. Work was begun under American auspices, but employing Mexican labor, in 1874; and the mining district now generally known as the Clifton mines was the result of these early labors by the pioneers.

The building of the Southern Pacific Railroad in 1880 and 1881, through the southern part of Arizona, and the building of the Atlantic Pacific subsequently, through the northern part of Arizona and New Mexico, have led to the large development of several now well-known mining districts, which, within the last few years, have become important producers, and have exerted a marked influence on the copper industry of the world. These principal districts are the Warren Mining District, in Cochise County, Southern Arizona, near the Mexican line; the Globe District, in Maricopa County, Arizona, near the line of the San Carlos Indian reservation, and north of the Gila River; and the mines of the Black Range in Northern Arizona, in Yavapai County, some fifty miles south of the Atlantic Pacific, and twenty miles east of the town of Prescott. The districts named comprise all the large producing districts. There are a large number of undeveloped copper claims scattered through the different mountains of Arizona, some of which, in the future, may become producers, although at the time of writing the low price of copper offers but little inducement for prospecting, and copper claims are usually passed over as of no value.

In addition to the mines of Arizona and New Mexico, the mines of Lower California, now rapidly developing by a French company, are likely to be a factor in the production of copper in the immediate future in the Southwest.

THE SANTA RITA COPPER MINES.

Considered in the order of discovery, the Santa Rita mines of New Mexico are the first to claim our attention. They are situated near the town of Silver City, New Mexico, in a comparatively open country, hilly and undulating, but not very mountainous, although at an elevation of some 6000 feet above sea-level. The Santa Rita mines are found near the contact of a limestone and a large bed of eruptive rock, to all appearances a felsite. The original openings made by the Mexicans were on native copper, cropping out in the felsite. The copper occurs in small pellets or shot scattered through the mass of felsite, or in small flakes, leaves, or tabular masses, sometimes as much as two feet square, and not generally over a quarter of an inch thick. The presence of these leaves and flakes precludes the idea that the copper is of the same age as the felsite and an integral part of this eruptive rock. The copper has undoubtedly been deposited subsequently to the eruption of the felsite, and in fissures formed at a later date. The native copper must, therefore, be held to occur in true fissure-veins, although the irregularity of the deposition has been such that no distinct vein can be found, and the copper-bearing rock presents rather the appearance of a *stockwerk*, having, however, a general easterly and westerly strike and almost vertical dip. In places near the surface, the native copper is altered into a beautiful pure red oxide, presenting all the characteristics of laminated structure shown by the native copper in greater depth.

Some of the mining claims of the Santa Rita mines, notably the Romero, have been very largely prospected, and a depth of 300 feet has been reached.

About the year 1882, a forty-stamp mill was erected on this property, and an attempt was made to concentrate the ore to a high grade, and smelt the resulting mineral on the spot into ingots. While the enterprise proved a mechanical success, it was found that the mass of the felsite contained a much lower percentage of native copper than had been anticipated; and after a very thorough test, the company operating the mines suspended operations, having found it unprofitable to treat the native copper ores.

Near the line of junction of the felsite and limestone, there is a parallel series of veins, in which the ores assume an entirely different character. They are carbonates and oxides, and were formerly profitably mined and smelted. In depth, the rich oxides pinched out, and work has been suspended at that part of the property.

At the junction of the limestone and felsite, and north of and parallel with the veins in the felsite, there is an enormous outcrop of brown hematite iron ore, extending many thousand feet in length and covering a large number of claims. Whether or not this iron outcrop is the gossan of underlying copper ore, has not, to my knowledge, been tested. It would seem from experience elsewhere, that a thorough examination of this great iron cropping might lead to the development of copper ore in depth. At present, the Santa Rita mines are entirely idle; and unless developments in depth on the iron ore outcrop should expose a richer and different character of ore from that treated in the stamp-mill, the property is likely to remain idle for a considerable time, at least until the end of the present era of low-priced copper.

THE CLIFTON COPPER DISTRICT.

The second mining district to claim attention is that of Copper Mountain, or, as it is better known, the Clifton mines. It was discovered about 1865, has been the scene of continuous operations since 1872, and is not only the oldest copper mining district in Arizona, but also, to the present day, the largest producer in the Southwest. It lies within an almost circular range of mountains, forming a large basin some ten miles in length north and south, and perhaps six or seven miles in width in an easterly and westerly course. Plate I., Fig. 1, gives an approximate idea of its topography. The basin is found between Eagle Creek on the west and the San Francisco River on the east, and there is only one practicable outlet from it, namely, by Chase Creek, which drains the whole basin, and cuts through the range separating the basin from the San Francisco River. At the junction of Chase Creek and San Francisco Cañon, is the town of Clifton, which is connected by the Arizona & New Mexico Railroad, a narrow-gauge line about seventy miles long, with the Southern Pacific Railroad at Lordsburg.

The San Francisco River is a rapid stream, which carries a large volume of water the year around; but Chase Creek runs dry in autumn. The water of the creek is heavily charged with copper, so that it is unfit for drinking purposes, except during the rainy season and while the snows on the mountains are melting. The geology of the district, although much disturbed in details, is, on the whole, simple. The center of the basin is a vast mass of porphyry. Leaving the center of the basin in almost every direction, the crests of the mountains surrounding the district are formed of stratified limestone. Where the limestone is wanting in the circular range, granite fills the gap. The beds of limestone are, in every instance, horizontal, and lie conformably on beds of sandstone. Both seem to abut unconformably against the granite. This granite seems to be eruptive; and the presence of large dikes of felsite cutting vertically through the bedded lime and sandstone gives additional weight to this view. The porphyry is, undoubtedly, of more recent age than the granite; for, in the Coronado mines, the porphyry, which here assumes the character of a true quartz porphyry, cuts the granite as a huge dike some 10,000 feet long and as much as 300 feet in width. Near the center of the district, the porphyry incloses large masses of limestone, which stand like islands in a sea of porphyry.

Following Chase Creek Cañon, from its origin in the basin easterly toward its junction with the San Francisco River, we first find ourselves in the rugged hills of porphyry of the basin. Opposite the Longfellow mines, we strike the inclosing range of mountains, and the lime and sandstones. The cañon here is eroded on the contact of the porphyry and the stratified rocks, the porphyry forming the northern walls of the cañon and the lime and sandstones the southern. Fig. 2 is a section across the cañon at this point.

Continuing down the cañon, we reach the granites, and, approaching the town of Clifton, modern trachytes.

Crossing the San Francisco River, and continuing our journey still farther east, we find a range of hills and mountains of quite recent volcanic origin. One prominent peak has the shape of, and is, undoubtedly, a recently extinct volcano. Lava covers this range of hills. Farther south, and toward the Gila River, a distance of some fifteen miles, a very recent conglomerate is found, in which round boulders of this lava, the trachyte of the town of Clifton, and round boulders of ore from the copper mines, form component parts. The mines must, therefore, have been in existence before the eruption of the lava and the older trachyte took place, while their age is limited on the other hand by the fact of their being found both in the sedimentary limestone and in the eruptive porphyry, and in granite. No fossils have ever been discovered, to my knowledge, in the limestone of the Clifton District; but in color and conformability with the underlying sandstone, it is very similar to that of the Globe District. The age of the limestone of the Globe District, and of all the other copper camps, has been satisfactorily determined, by the presence of fossils, to be Lower Carboniferous.

The mines of the Clifton District are readily divided into three groups: first, those occurring in limestone; secondly, those occurring in porphyry; and thirdly, those occurring in granite. The ores of the first system of veins are oxides, primarily the red oxide or cuprite in a gangue of compact hematite, and malachite and azurite in a gangue of manganese ore or wad. The ores of the second and third systems are oxides and oxysulphides on the surface, changing into copper glance at a trifling depth, and into yellow sulphurets in the deepest workings. While the extent and number of the veins of the second and third class are considerably larger than those of the first class, the latter are, by far, the most valuable and productive, and are the ones that first gave prominence to the Clifton mines.

The principal mine in the district is the well-known Longfellow, now owned by the Arizona Copper Company. The first discoveries made on the Longfellow were some small seams and pockets of ore, cropping out near the crest of the Longfellow hill in a decomposed shaly limestone largely altered into clay. These small strings, veinlets, and bunches were followed into the hill by a horizontal tunnel, and led to the discovery of two parallel veins of ore striking approximately northeast and southwest, and dipping at an angle of about 80 or 85 degrees to the southeast, that is, with the slope of the hill. Fig. 2 illustrates these conditions.

At and below the level of the upper Longfellow tunnel, the two veins carry an iron ore containing red oxide of copper and but little carbonate of copper. On the dip of the vein from this level, only such ores are found, until the veins approach the underlying sandstones. Native copper there occurs sparingly, and the veins become pinched, and finally barren. They have not been followed into the sandstone; and it is problematical whether they have any value in that rock.

On the rise of the vein above the Longfellow adit, some huge chambers of ore have been found. The character of the ore in these upper levels changes, and is principally wad; that is, a manganiferous ore, containing green and blue carbonates of copper. An average sample of the selected blue and green carbonate ores taken by the writer in 1880, from one of

* Abridged from a paper read at the Bethlehem Meeting of the American Institute of Mining Engineers, May, 1886.

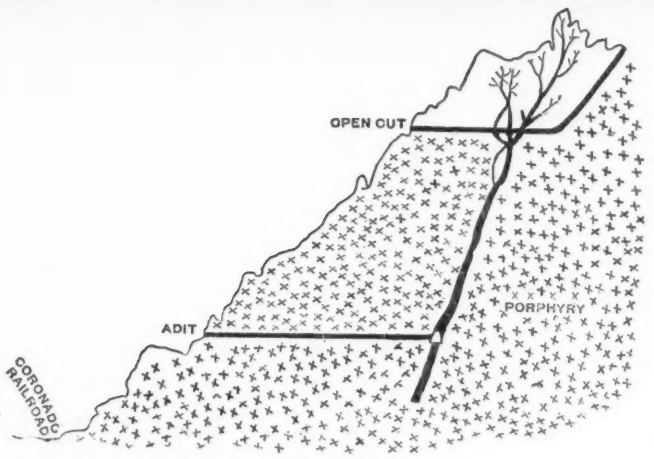

Fig. 6.—Section of Metcalf Hill.

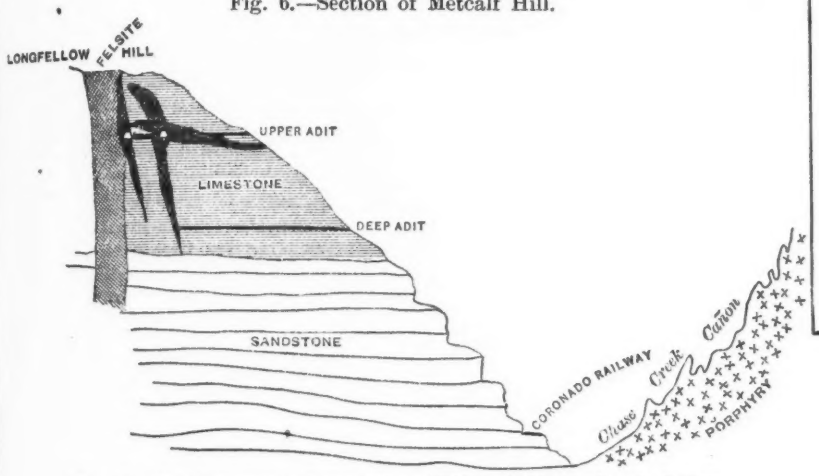

Fig. 2.—Section across Longfellow Hill and Chase Creek Cañon.

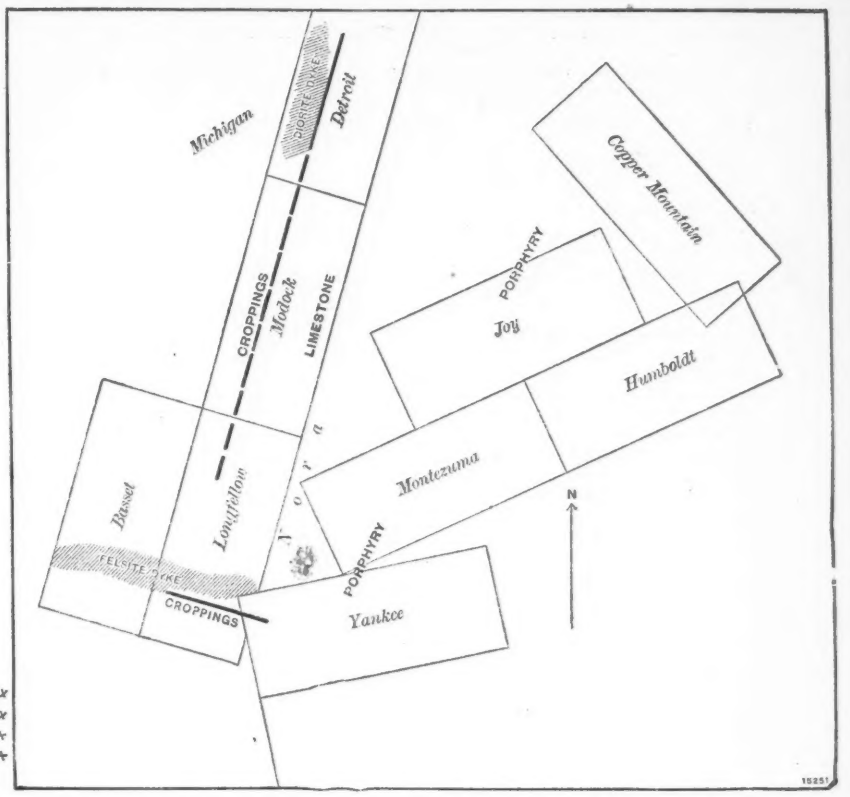

Fig. 5.—Approximate Map of the Longfellow Mining Claims, Clifton District, Arizona.

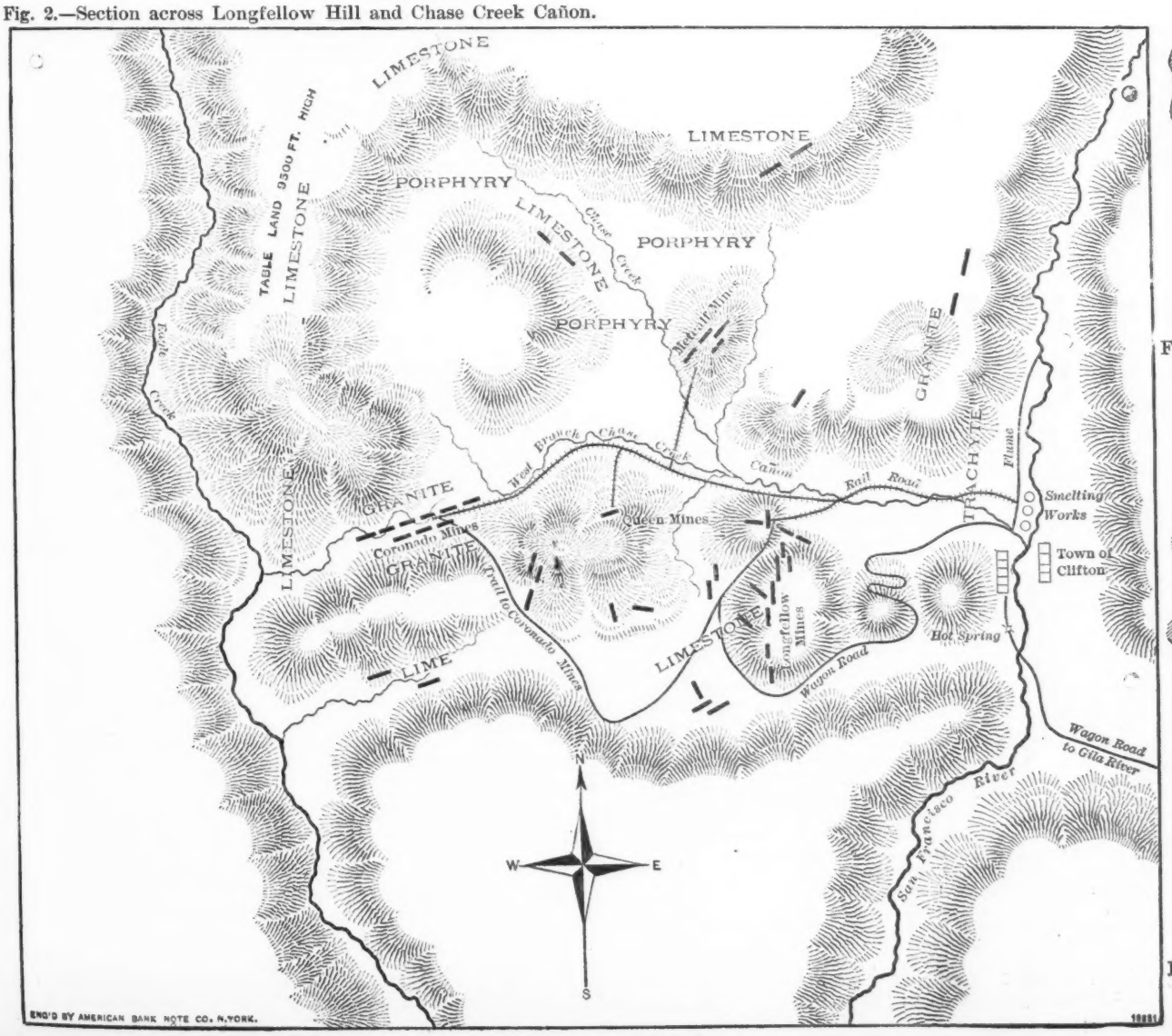

Fig. 1.—Sketch-Map of the Clifton Mining District, Arizona.

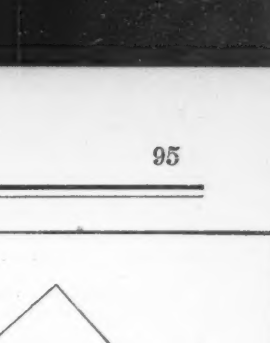

Fig. 4.—Vertical Section of Vein Structure in the Longfellow Mine.

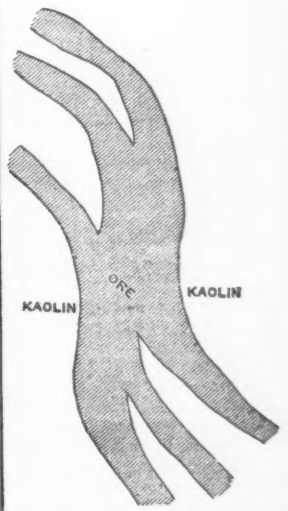

Fig. 3.—Horizontal Section of Vein-Structure in the Longfellow Mine.

the huge stopes, some forty feet wide, then open on this ore, gave the following analysis:

Cu	38·80	Fe_2O_3	11·56
SiO_2	11·15		

An analysis of a very pure specimen of wad or manganiferous copper ore, made by Prof. W. Mayer, gave the following result:

CuO	28·89	Fe_2O_3 and CO_2	2·74
MnO_2	31·24	CaO	traces
SiO_2	24·81		
H_2O	11·87		99 55

An average sample of over a thousand tons of this manganiferous ore, as accumulated at the mines in 1880, gave the following analysis:

Cu	17·17	Fe_2O_3	15·29
SiO_2	26·80	MnO	7·49

By referring to Fig. 2, it will be seen that the Longfellow mine is an almost vertical fissure in stratified limestone, at or near the junction with a dike of felsite. In places, the vein, or branches of it, are at the contact of the limestone and felsite, there forming a true contact-vein. Again, branches of the vein are entirely in felsite, and other branches entirely in limestone. We see an illustration in the Longfellow mine of the general conditions of veins of ore in stratified limestone, so well described by various writers as occurring in the lead veins worked in the mountain limestone of England. We find true "flats," or bodies of ore branching from the main fissure, and practically replacing one or more beds of the limestone. Again, we find other masses of ore that leave the main fissure and follow the vertical seams in the bedded limestone. More generally, however, the ore occurring entirely in the limestone assumes very irregular shapes, as if it had filled an irregular cavity. Hence, many engineers and miners have called the Longfellow mine a "deposit" or "pocket." Indeed, the same opinion has been expressed by different geologists of all the other large copper mines in the Southwestern districts. It is, however, erroneous. With only two exceptions of minor importance, all of the large copper mines of the Southwest are true fissure-veins in the sense that they are bodies or masses of ore deposited in the rocks that now contain them, subsequent to the deposition or formation of these rocks. The copper ore has a true intrusive origin, and has come from the deep. Figs. 3 and 4 show a vein structure common in this mine, and illustrate the true vein origin of the ore.

The fact of the profitable veins occurring in limestone, and presenting all the usual great irregularities of veins found in this rock, can not blind the careful observer; for no other theory than that of an intrusive origin will explain all the phenomena of the occurrence of these ores.

The Longfellow mines, and also those of Bisbee, those of Globe, and those of the Verde District in the Black Range, are invariably found in conjunction with great bodies of clay. Very often, near the surface, clay only is found, and to all appearance every vestige of rock has been removed. Great stress is laid on this fact by those claiming these veins to be "deposits." A close examination of this clay, however, invariably proves that it is a decomposed rock, entirely due to the enormous thermal action that has taken place during the deposition of these copper ores. There are places in the mines of Bisbee where the chemist can study this action with exceptional facility.

In Bisbee, the country-rock is a limestone, and at some distance from the vein it is a pure carbonate of lime and magnesia. Approaching toward the walls of the vein, the character changes, and there is found in it a gradually increasing amount of alumina, magnesia, iron, and manganese. The ores of these veins themselves contain a considerable percentage of these ingredients.

As a further proof of the correctness of these views, the results of microscopic examination of the rocks near these copper veins is adduced. At the instance of the writer, such an examination, just completed by Dr. Julien, of this city, and J. P. Iddings, of Washington, has led to the discovery that the eruptive rocks found even at considerable distances from the veins are all kaolinized or decomposed by thermal action. The surface decomposition of all rocks in Arizona has been very great, and this decomposition, jointly with the thermal action, has produced the great masses of clay that have led many examiners to a wrong conclusion as to the character of the veins. In the Longfellow mine, particularly, has the decomposition of the walls been marked. Both walls of the vein are very often pure white kaolin. The following is an analysis of the kaolin, which clearly illustrates its composition and character:

SiO_2	42·40	Cu	trace
Al_2O_3	32·50	MgO	trace
Fe_2O_3	16·17		
CaO	2·17		93·17

The remainder of the 100 per cent is principally moisture.

At Clifton, this kaolin, mixed with two parts of sand, has done good service as a fire-resisting material in reverberatory furnaces.

Referring to the accompanying map of the Longfellow claims, Fig. 5, the strike of the two veins, of which Fig. 2 is a cross-section, is seen to be across the Longfellow and into the Yankee mine. The pitch of the ore is into the Yankee. The bulk of the ore on the Longfellow claim proper has been extracted; but in depth, the Yankee still holds good ore. The claims called the Longfellow, Modoc, and Detroit are on the crest of a hill, all composed of horizontal sedimentary limestone, either of dolomitic or shaly character.

On the Detroit claim, there is a dike of a fine-grained green rock, probably a diorite, running parallel with the long axis of the claim and at right angles with the original Longfellow vein. At the contact of this green rock with the bedded limestone, a small string of ore was followed down some four years ago, and led to the discovery of a great body of manganiferous ore, similar to that in the upper workings of the Longfellow, striking at right angles with the great bodies of Longfellow ore that first gave fame to this district. But little green carbonate has been found in this new development. The bulk of the ore is azurite and cupriferous wad.

Parallel with the crest of the Longfellow, Modoc, Detroit Hill, and partly covering the Yankee, Montezuma, Humboldt, Joy, Copper Mountain, and Arizona Central claims, the contact with porphyry that covers the bulk of the mining district is found. On two of these claims, fine bodies of rich oxidized ores have been discovered in the porphyry and worked to a depth of several hundred feet; but they have not held out in depth, the ore-bodies invariably pinching and getting lean.

We now come to the second class of veins. The ores of both the second and third class being found in a siliceous country-rock (whereas the ores of the Longfellow and similar mines are in the limestone), the gangue is more siliceous, and there is more or less sulphur in the minerals. The most prominent development of this class of ores is on the Metcalf Hill, something over two miles northerly from the Longfellow mines and near the center of the Clifton copper basin. Fig. 6 illustrates the character of deposition of these ores.

At the surface, the veins form a *stockwerk* in the porphyry. In depth, all the small branches of ore, covering in places a territory one hundred feet in width on the surface, unite and form a single vein, which has been developed by the lower adit shown in Fig. 6. A great deal of development-work has been done in depth on these and on the other mines found in porphyry; and the result has invariably proved that these veins rapidly deteriorate in depth and become valueless under the commercial conditions ruling at present in the Southwest. The croppings of the Metcalf mine are at present worked as an open cut. Several hundred tons of rock, containing the ore in thin strings and small veins, are loosened at a single blast, and then assorted. It takes as much as fifteen tons of rock thus broken to give one ton of merchantable ore.

(TO BE CONTINUED.)

THE "LANCASTER" ROCK-BREAKER AND ORE-CRUSHER.

There is probably no class of machines of which so much is required, and which is subject to such enormous strains, as that used for crushing ores and minerals. While the number of crushers, of all styles and systems now before the public, is very large, there is always room for improvement in all of them, and any addition to their number of a new machine, which, by its careful designing and mechanical arrangement of parts, obviates the faults and weaknesses of its predecessors, will be heralded with delight by the mining community at large. The crusher that we illustrate in this issue has been specially designed to overcome two great faults or objections that are inherent to most crushers. The first of these is the excessive wear, due to the high speed at which all the heavy moving parts of the machinery must be run in order to give the requisite number of *bites* of the movable jaw per minute. In the crusher under consideration, this is obviated by the arrangement of the double cam *R*, which provides for two bites of the jaw for every revolution of the fly-wheel shaft. The second trouble with most jaw-crushers is the difficulty of any close adjustment as to the size of the jaw openings while the machine is running. In the "Lancaster" crusher, this can be accomplished by any laborer who may be feeding the machine by means of a hand-wheel placed near the front of the crusher, and which commands the adjusting cam *J*. The subjoined description will fully explain the construction of this crusher, which, to say the least of it, shows great ingenuity on the part of the inventor in the assembling of the different parts in such a manner as to accomplish the end in view with a minimum of surfaces exposed to undue friction.

A is the bed or frame of the machine, to the front part of which is secured the fixed jaw *B*. *P* is the driving-shaft, journaled in the rear of frame *A*, and having keyed thereto the fly-wheels *Q Q*, and hand or belt-wheel *F*. Upon the steel shaft *P* is forged the cam *R*, which has two quick rises, to give the movable jaw *D* a knapping or hammer-like action. From the cam *R*, motion is transmitted to the dog *L*, which is provided with an anti-friction roller *O*. This dog *L* is fulcrumed on the cam-block *K*, which is adjustable vertically by the cam *J*. This cam or eccentric *J* is secured to a shaft having bearings in the side of the machine, and is operated by a hand-wheel *e* and worm-wheel *C*, placed in suitable bearings on the outside of the machine. By moving the cam *J*, a different position of the block *F* and the dog *L* is obtained. *I* is the main lever fulcrumed on the shaft *Z*, having bearings in the frame of the machine. This lever is operated by the dog *L*, which acts under the rear end of the lever *I*. *D* is the movable jaw held to the machine by the rod that is provided with a set-nut S^2 and flexible washer or rubber cushion *S*. The upper end of the jaw *D* is guided and sustained by the toggle *H*. The lever *I* conveys the movement directly at *X* to the jaw *D*. In consequence of locating the toggle *H* as shown, the movement of the jaw *D* is forward and downward toward the fixed jaw *B*. The effect of moving the jaw in the manner described is of great benefit. In crushing the rock, it also rotates it downward, thus feeding the rock or ore through the machine in a most effectual and rapid manner. The toggle *H* is made hollow, to break in case of any iron or steel falling into the machine. *V* is the hopper of the crusher. The crushing surfaces both of the movable and fixed jaw are corrugated and faced with steel. A working model of this machine may be seen at the offices of the patentee, Mr. James H. Lancaster, of this city.

Packing the Lick Lenses.—The actuality of the molecular changes brought about by pressure and changes of pressure in materials, but which do not affect ordinary daily practice, is shown by the care that is to be taken in sending the two great glasses for the double lens for the Lick telescope from Cambridge by express to San José. They will be wrapped separately in fifteen or twenty thicknesses of soft, clean cotton cloth. Next will come a thick layer of cotton batting, and then a layer of paper. The glasses will then be put into boxes of wood lined with felt. No nails will be used near the glasses, and the boxes will take the shape of the glasses. The boxes will be inclosed in two others of steel, each about the shape of a cube, being packed tightly with curled hair. Each steel box will be inclosed in another steel box, the inner sides of which will be covered with spiral springs. Both steel boxes will be made air-tight and water-proof, and the outer chests will be packed with asbestos to render them fire-proof. Each will then be suspended by pivots in strong wooden frames, with contrivances for turning each chest one quarter around every day during the journey to California. This is to prevent any molecular disarrangements in the glasses and to avoid the danger of polarization, it being feared that the jarring of the train will disturb the present arrangement of the molecules unless the position of the glass is daily changed and all lines of disturbance thus broken up.

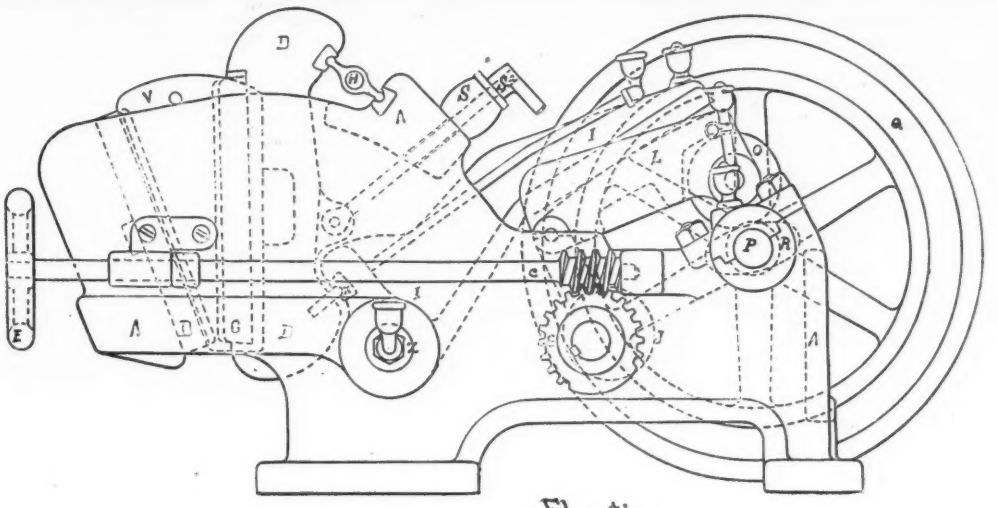

Fig. 2.

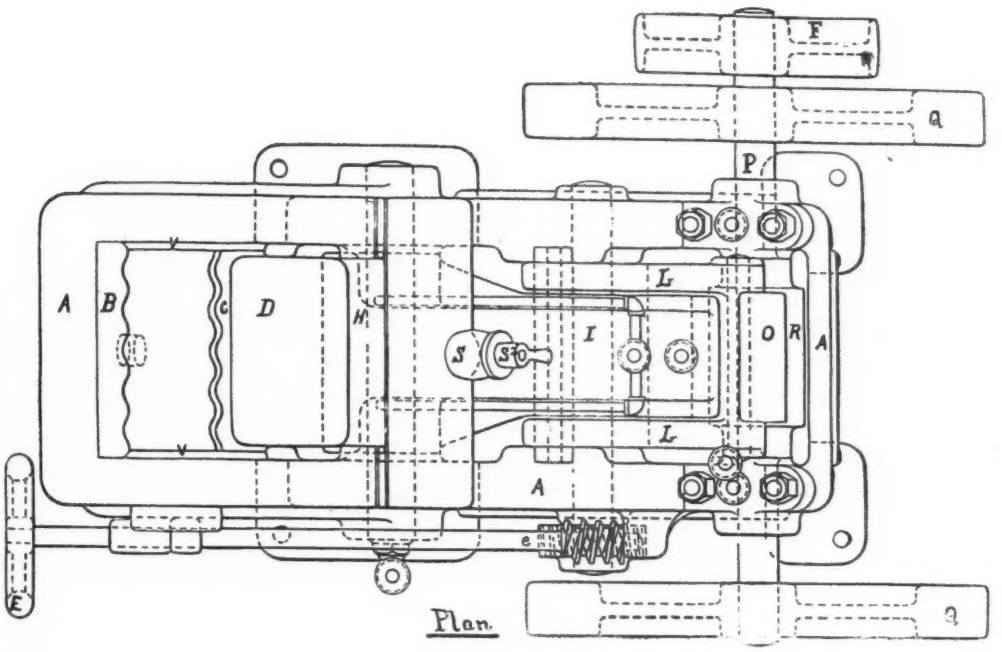

Fig. 3.

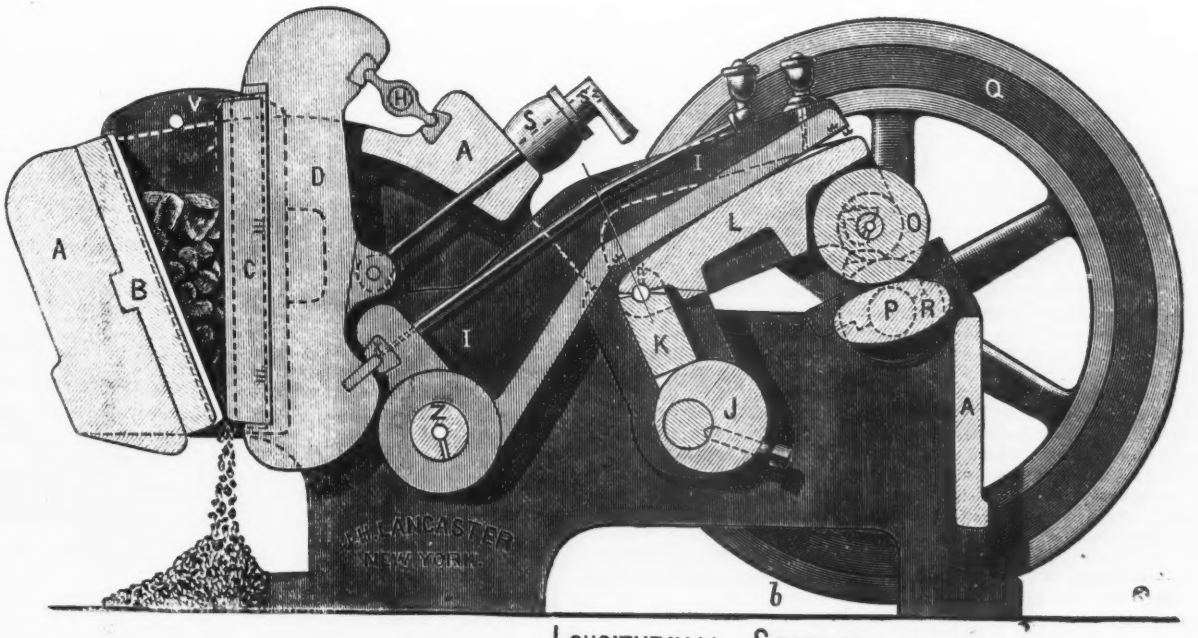

Fig. 1.

THE "LANCASTER" ROCK-BREAKER AND ORE-CRUSHER.

Fastest Tunneling on Record.—At shaft 15 of the New Croton Aqueduct, during the month of January (25 working days), there have been drilled, with Rand slugger drills, 612 feet of heading; 287 feet north and 325 feet south. Full details will be given in our next.

The Cambria Mutual Benefit Association.—The third annual report of this association, which includes all the employés of the Cambria Iron Company, Pa., shows aggregate receipts of $31,098, payments of $24,354; balance in treasury, $6744.

Cement Imported into the United States in 1886.—The following amounts of hydraulic cement were imported into the United States in 1886, from the several shipping points named: Antwerp, 31,149 barrels; Amsterdam, 2468; Bremen, 68,055; Glasgow, 530; Hamburg, 84,746; Marseilles, 2570; Newcastle, 7160; Stettin, 41,379; London, 243,822; and Rotterdam, 31,450. The total is 513,309 barrels.

Blasting without Explosives.—A new method has been recently introduced by Dr. Kosman, and is decribed in the eighty-seventh volume of the Institution of Civil Engineers, page 41. Zinc powder and sulphuric acid are contained in a glass cartridge, by breaking which the two substances are brought into contact and hydrogen is rapidly evolved. A pressure of about 37,000 atmospheres is obtained, although, perhaps, with hardly sufficient rapidity to justify the use of the term explosion.

Ozokerite and Natural Gas in Egypt.—A Cairo telegram states that at the petroleum boring No. 1 at Jemsah, the workmen found, at a depth of 365 feet, ozokerite, or solid petroleum—a mineral wax, considered more valuable than petroleum. Now, at 380 feet, they have reached a close-grained coral. Gas and oil are becoming more plentiful. In No. 2 boring at Jemsah, slight traces of gas and oil have been found. In No. 3, at a depth of 155 feet, a coral clay has been reached. In the boring at Zeiti, at a depth of 400 feet, hard coral was touched.

A New Mode of Lighting.—A new mode of lighting is on trial at the Marlborough rooms, and the experiment seems to be successful. A small gas flame has an ordinary lamp-glass over it, and over this is suspended a small muslin skirt, impregnated with incombustible oxides. The gas flame lays hold of these, and the result is an enormous increase of the illuminating power of the flame. The light is white and smokeless.

Nickel Crucibles.—Pure nickel is one of the toughest of metals; it fuses only at very high temperatures, and has a fine grain susceptible of high polish. These qualities have led to its being used for chemical crucibles and evaporating-dishes. For many purposes, they are quite as serviceable as platinum ones, and cost only one tenth the price of platinum. They stand alkalies well, Mr. Wanklyn having found that there was no alteration of weight in the crucible after caustic potash was fused in it. Hydrochloric acid, dilute or concentrated, may be used in the cold to clean them, so also cold vitriol; but concentrated nitric acid attacks them. They can be used for taking water residues.

Iron Ore from Greece.—According to English consular reports just published, iron is found in various parts of Greece. The principal mines are in the small rocky island of Seriphos, where the supply is practically inexhaustible. The mines belong to a company called Société des Usines de Seriphos, having head-quarters at Paris. The mining, loading, and transportation are let to a German engineer, Emile Grohmann. The present output of the works is about 50,000 tons of ore a year, which is sold free on board at Seriphos at 5s. 8d. a ton. Of this sum, Grohmann receives 4s. a ton for the expenses of mining, loading, and transportation, the remaining 1s. 8d. being the company's profit. There are employed in the works about 100 laborers, at wages varying from 2s. 5d. to 3s. 2d. a day. The company guarantees 50 per cent of pure metal, and the last shipped had 55 per cent. The principal market for the ores is France. The *Engineer* says that the United States has also taken a portion, and there has been lately a marked increase. During September last, two shipments, amounting to 5600 tons, were consigned to Latasa & Co., of New York. Ships can call at Seriphos in any weather, and lie alongside the wharf for loading.

The Longest Tunnel in the World.—An engineering work that has taken over a century to construct can hardly fail to offer some points of interest in its history, and illustrate the march of events during the years of its progress. An instance of this kind is to be found in a tunnel not long since completed, but which was begun over a hundred years ago. This tunnel, or adit as it should be more strictly termed, is at Schemnitz, in Hungary. Its construction was agreed upon in 1782, the object being to carry off the water from the Schemnitz mines to the lowest part of the Gran Valley. The work is now complete, and, according to the *Bauzeitung fur Ungarn*, it forms the longest tunnel in the world, being 10·27 miles long, or about one mile longer than St. Gothard, and 2½ miles longer than Mont Cenis. The hight is 9 feet 10 inches and the breadth 5 feet 3 inches. This tunnel, which has taken so long in making, has cost very nearly a million sterling, but the money appears to have been well spent; at least, the present generation has no reason to grumble; for the saving from being able to do away with water-raising appliances amounts to £15,000 a year. There is one further point, however, worth notice; for if we have the advantage of our great grandfathers in the matter of mechanical appliances, they certainly were better off in the price of labor. The original contract for the tunnel, made in 1782, was that it should be completed in thirty years and should cost £7 per yard run. For eleven years, the work was done at this price; but the French revolution enhanced the cost of labor and materials to such an extent that for thirty years little progress was made. For ten years following, much progress was made, and then the work dropped for twenty years more until the water threatened to drown the mines out all together. Finally, the tunnel was completed in 1878, the remaining part costing £22 a yard, or more than three times as much as the original contract rate.

The Meritens Process for Rendering Iron Inoxidizable.—M. de Meritens, in continuing his experiments upon the protection of iron, has obtained some further results, which seem likely to be of practical importance. The method of protecting an iron or steel surface by the electrolytic formation of a coating of the black magnetic oxide has already been taken up in France as a commercial process. Experiments in this direction have also been undertaken by the French arsenals, and are understood to have led to satisfactory results. M. de Meritens describes his later researches in a note presented to the French Academy, as follows: "When we submit a piece of iron to the action of the current in a bath of cold water, the formation of magnetic oxide does not immediately take place. The surface of the metal is in the first place coated with a layer of the protoxide of iron. This is a body of which little is known at present: it has not been completely studied by any chemist. Berzelius undertook a prolonged investigation of the substance, but he has never completed the work. The protoxide is the least stable of the oxides of iron. If it is produced by precipitation from a salt of iron, it is immediately converted into the sesquioxide. A similar conversion into the higher oxide takes place when the protoxide formed upon the surface of the metal by electrolysis is exposed to the air, or if the electrode is allowed to remain in the bath after the cessation of the current. If, however, the sheet of iron coated with the protoxide is immediately transferred to a bath containing a solution of a suitable salt of some other metal, such as copper, silver, gold, or aluminium, a perfectly adherent layer of this metal is immediately formed upon the iron. It is probable that the action is due to a partial reduction of the protoxide by hydrogen, and the formation of an actual alloy between the two metals, both of which are at the moment in the nascent condition." M. de Meritens exhibited specimens of iron coated by this process with the several metals named above.

DIVIDENDS PAID BY MINING COMPANIES DURING THE MONTH OF JANUARY AND FROM JANUARY 1ST, 1887.

NAME OF COMPANY.	Location.	Paid in January.	Since January 1.	Total to date.
Adams, s. l.	Colorado	$15,000	$15,000	$555,000
Atlantic, c.	Michigan	40,000	40,000	360,000
Big Bend Hydraulic, g.	Dakota	6,000	6,000	216,000
Cons. Cal. & Virginia, s.	Nevada	108,000	108,000	172,800
Granite Mountain, s.	Montana	200,000	200,000	1,800,000
Homestake, g.	Dakota	25,000	25,000	3,718,750
Illinois, s.	New Mexico	25,000	25,000	25,000
Montana, Limited, g. s.	Montana	204,600	204,600	999,900
Ontario, s.	Utah	75,000	75,000	8,000,000
Original, s.	Montana	3,000	3,000	200,000
Plymouth Cons., g.	California	25,000	25,000	1,850,000
Quincy, c.	Michigan	160,000	160,000	4,570,000
Silver King, s.	Arizona	25,000	25,000	1,800 000
Small Hopes, s.	Colorado	50,000	50,000	2,562,500
Yankee Girl.	Colorado	12,500	12,500	1,125,000
Total.		$974.100	$974,100	$28,754,250

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book-buyers, give the retail price? These notices do not supersede review in another part of the Journal.]

UNITED STATES GEOLOGICAL SURVEY. J. W. POWELL, DIRECTOR. Bulletin No. 30. *Second Contribution to the Studies on the Cambrian Faunas of North America.* By Charles Doolittle Walcott. Washington: Government Printing-Office. 1886. 8vo, pages 369 (including Index), 33 plates, 10 figures. Paper covers, 25 cents.

Bulletin No. 31. *Systematic Review of our Present Knowledge of Fossil Insects, including Myriapods and Arachnids.* By Samuel Hubbard Scudder. Washington: Government Printing-Office. 1886. 8vo, pages 128 (including Index). Paper covers, 15 cents.

Bulletin No. 32. *Lists and Analyses of the Mineral Springs of the United States* [a Preliminary Study]. By Albert C. Peale, M.D. Washington: Government Printing-Office. 1886. 8vo, pages 235 (including Index). Paper covers 20 cents.

Bulletin No. 33. *Notes on the Geology of Northern California.* By J. S. Diller. Washington: Government Printing-Office. 1886. 8vo, pages 23. (*No Index.*) Paper covers, 5 cents.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

GRANTED JANUARY 25TH, 1887.

356,464. Rock Drill. Joseph C. Githens, North Tarrytown, New York.

356,476. Process of and Apparatus for Manufacturing Illuminating Gas. James J. Johnston, Columbiana, Ohio. Assignor of one half to Albert C. Ellis, Pittsburg, Pa.

356,477. Process of and Apparatus for Manufacturing Heating-Gas. James J. Johnston, Columbiana, Ohio. Assignor of one half to Albert C. Ellis, Pittsburg Pa.

356,488. Mining Machine. M. Frank McNeily, Sterling, Ill.

356,551. Nail-Strip and Method of Forming Nails. Freeborn F. Raymond, 2d, Newton, Mass.

356,552. Nail Making, Distributing, and Driving Device. Freeborn F. Raymond, 2d, Newton Mass.

356,564. Wedge for Mining Coal. James O. Watson and Conrad A. Sipe, Fairmont, West Va.

356,587. Process of and Apparatus for Manufacturing Gas. James J. Johnston, Columbiana, Ohio. Assignor of one half to Albert C. Ellis, Pittsburg, Pa.

356,610. Process of and Apparatus for Obtaining Ammonia from Coal. William Young, Peebles, County of Peebles, and George T. Beilby, Middleton, County of Mid-Lothian, Scotland.

356,640. Process of Manufacturing Amalgams by Electrolysis. Arthur S. Hickley, Montreal, Quebec, Canada. Assignor by mesne assignments, to the Electric Amalgam Company, of Maine.

356,646. Nail-Plate Feeder. David Jones, Bay View, Wis., Assignor of one half to Dennis D. McCarthy, same place.

356,684. Gas-Regulator. Thomas R. Firth, Newport, Ky., Assignor of two thirds to James M. Reed and Edward G. Firth, both of same place.

356,699. Mining-Machine. Samuel S. Stine, Osceola Mills, Pa.

356,720. Process of Manufacturing Gas. William P. Lane, Philadelphia, Pa., Assignor of two thirds to Alexander M. Sutherland, Elizabeth, New Jersey, and William M. Lane, Lancaster, Pa.

PERSONALS

Mr. F. G. Corning, M.E., has gone to California, New Mexico, and Colorado, on professional business, and on his return will go to England.

All of our *confrères* who either were graduated at Liége, or who have had occasion to visit that center of the Belgian metallurgical industries, will hear with regret the announcement of the death of Prof. Louis Trasenster, of the School of Mines of that city. Very few men have been so deservedly popular among the members of the profession, both for his good-fellowship and also for the hight of his professional attainments. His works on mining machinery, especially as applied to ventilation, pumping, and the uses of compressed air and water under pressure, have become standards. Professor Transenster was the founder of the Association of Liége Mining Engineers. He died at the age of seventy-one.

FURNACE, MILL, AND FACTORY.

The Nashville Iron Company, Nashville, Tenn., is putting in additional machinery.

A charter has been granted to the Champion Blower and Forge Company, of Lancaster, Pa. ; capital stock, $40,000.

W. J. Rattle, of Cleveland, Ohio, has leased the Pilot Knob furnace, in Iron County, Mo., and will run it on Bessemer iron from Pilot Knob ore.

The Chicago Steel Casting Company has been organized with a capital stock of $30,000 ; incorporators, William H. Colcord, Henry V. Freeman, and George R. Walker.

The Chicago Iron and Metal Company has been organized with a capital stock of $100,000 ; incorporators, Robert H. Pugh, William Douglas, and Reginald A. Addie.

W. H. Everson & Co., of the Scottdale Iron-Works, Scottdale, Pa., have just completed and started a new sheet mill with six trains of rolls adapted for making their sheet-iron. They are now building a 15-inch skelp-mill, which will be completed in about a month, and will have a capacity of 75 tons a day.

A number of Pittsburg, Pa., capitalists, among whom are W. D. Henry, J. H. Blair, and James McClarren, have begun operations on lands owned by the Massillon Stone Company, two and a half miles from Massillon, Ohio, for the establishment of a plant to manufacture fire-brick.

The Sergeant Rock-Drill Company, of this city, has just issued an attractive circular giving a description of its rock-drills and all the improvements. It also contains much useful information relating to the company's air-compressors, hoisting-engines, steam-pumps, etc.

The Birmingham Machine and Foundry Company has been organized at Birmingham, Ala., with a capital stock of $100,000. It will erect works at East Birmingham, and expects to be in operation in about two months. The directors are : J. H. Aldrich, Gen. R. D. Johnston, George C. Ball, John C. Henly, Edward Linn, C. W. White, and R. W. Boland.

Gadsden Alabama Furnace Company, Gadsden, Ala., has been organized with a capital stock of $200,000, for the immediate building of a 100-ton blast-furnace at that place The officers are : L. S. Colyar, Chattanooga, President ; George L. Morris, Birmingham, Vice-President ; W. G. Brockaway, Gadsden, Secretary.

The iron mills of Spang, Chalfant & Co., at Etnaborough, Pa., which were wrecked in part by the explosion of the battery of boilers on the 24th ult., as mentioned in our last issue, have started up, with the exception of the guide and bar mill. The wrecked battery of boilers was repaired, and the works will all be running in a few days.

CONTRACTING NOTES.

CONTRACTS OPEN will be found on page XIX. New Contracts this week : No. 194, for Blast Furnace ; No. 195, for Dredging ; No. 196, for Lighting by Electricity, Gas, and Oil ; No. 197, for Dredging ; No. 198, for Boilers, Valves, etc. ; No. 199, for Bridge ; No. 200, Boiler ; No. 201, for Cast-Iron Water-Pipe, Valves, and Hydrants ; No. 202, for Coal Elevator ; No. 203, for Electric Apparatus ; No. 204, for Water-Pipe ; No. 205, for Dredge Scows.

Messrs. Gordon, Strobel & Laureau, of Philadelphia, have been awarded the contract for the hot-blast stoves to be connected with the new stack to be added to the Central furnace of the Cleveland Rolling-Mill Company, Cleveland, Ohio. The capacity of the new stack will be about 175 tons a day.

The Shenandoah Valley Railroad proposes building an iron bridge across the Potomac River that will be of five spans, "Pratt truss," 166 feet center to center of end pins.

Lone Star Salt Company, Colorado, Texas, is contemplating putting in more steam-power, and is negotiating for another 60-inch by 16-foot tubular boiler. Other enlargements and improvements are contemplated.

The city of Shelbyville, Tenn., will put in new pumping machinery this spring, for lifting water for fire purposes, and invites correspondence from manufacturers.

The Texarkana Water Company, Texarkana, Ark., is building water-works with a capacity of 2,000,000 gallons.

At the brick-works of Mr. A. J. Mullen, Selma, Ala., the capacity has been doubled. The old steam plant has been replaced with a Penfield & Son patent brick-machine, styled "Chicago Special," with an easy capacity of 60,000 bricks a day ; and a Westinghouse automatic engine and boiler of 35 horse-power has been added.

The contract for building Albany street bridge, Boston, Mass., mentioned in our last issue, has been awarded to the New Jersey Steel and Iron Company, at $11,300.

J. C. Burton, of Philadelphia, Pa., was the only bidder for 100,000 pounds of American refined lead, at 4·89c. per pound.

The Water Board, Baltimore, Md., has awarded the contract for water-pipe to the Gloucester Iron-Works, of Philadelphia, iron pipe of various sizes, amounting to $72,890. The contract for iron castings has been awarded to H. C. Larabee & Co., of Baltimore, at 2·24 cents a pound for pipe fittings and 2·31 cents a pound for special castings.

The Water Board of Reading, Pa., wishes correspondence with makers of cast-iron water-pipe and stop-cocks.

The Water Board, Minneapolis, Minn., has made an award in the matter of water-pipe, to which we referred in our last issue, to Dennis Long & Co., of Louisville, Ky., at $34.50, which is $1.75 a ton less than their bid.

Information in reference to gas or electric lighting for Rockland, Mass., can be secured from Charles L. Rice.

Messrs. Carnegie & Co., Pittsburg, Pa., have now on hand a contract for manufacturing 5000 tons of steel for the Union Bridge Company, of New York, to be used in constructing the new bridge over the Hudson at Poughkeepsie. The bridge will be 5000 feet long and 212 feet high in the clear It will have high steel towers, composed of lattice-work.

U. S. Engineers' Office, Wilmington, Del., has received the following bids for dredging in Wilmington harbor : Frank C. Somers, Philadelphia, Pa., 12¾c. per cubic yard, measured in scows ; Baltimore Dredging Company, Baltimore, Md., 16c. ; George C. Fobes & Co., Baltimore, Md., 16½c. ; Frank Pidgeon Dredging Company, New York City, 27c. ; Thomas P. Morgan, Washington, D. C., 17c. ; American Dredging Company, Philadelphia, Pa., 14c. ; National Dredging Company, Wilmington, Del., 12c. ; Atlas Dredging Company, Wilmington, Del., 12·3c. In Ice Harbor, New Castle : Frank C. Somers, Philadelphia, Pa., 14c. per cubic yard, measured in scows ; Baltimore Dredging Company, Baltimore, Md., 16½c. ; Frank Pidgeon Dredging Company, New York City, 33c. ; American Dredging Company, Philadelphia, Pa., 13½c. ; National Dredging Company, Wilmington, Del., 12c. ; Atlas Dredging Company, Wilmington, Del,, 12·3c.

The Water Department of Philadelphia, Pa., has awarded Charles P Perkes, Philadelphia, the contract for brass steam-fittings, cocks, and valves, made in Philadelphia, and for wrought-iron fittings, the other bidders being Hunter & Dickson, and Whestone & Co. For cast-iron water-pipes and special pipe-castings, Mellert Foundry and Machine Company, its prices ranging from 6-inch pipe, 1·45c. ; 10-inch, 1·43c. ; 16-inch, 1·42c ; and a 20 inch pipe, 1·41c. Small specials, 2·45c. Large specials, 2·35c. The contract for the breeches pipe went to the Camden Iron Company, at 3·96c., and brass to F. and J. Charner at 10⅞ cents for yellow, and 13 cents for red metal.

The naval officers that have been appointed to inspect the steel that is to be supplied for building the new naval vessels, have been detailed for duty under direction of Commander R. D. Evans at the different establishments, and it is announced that the government is now ready to receive such material as is deemed satisfactory as fast as it can be furnished by the contractors. The specifications for the steel armor plate for the new vessels will be issued soon.

The Camden, New Jersey, Water-Works need a new 10,000,000-gallon pump, a new reservoir, new pipe to replace pipe that is rusted out, and an extension of the pipe system, and the city will soon be in the market for this machinery and supplies.

LABOR AND WAGES.

The miners in Pictou County, Nova Scotia, have struck, owing to a reduction of wages.

The men at the blast-furnaces at Sharpsville, Pa., struck on the 3d inst. for an advance of twenty-five cents a day. An offer of 10 per cent advance was refused. Fears are entertained that the strike may become general throughout the valley.

The Board of Arbitration that met at Youngstown, Ohio, on the 31st ult., to adjust the differences between the operators and miners of the National and Fairview mines at Washingtonville, Ohio, decided that the price of mining should be advanced from 82½ to 87 cents a ton. The award is said to be satisfactory to all parties.

The demands of the Monongahela River miners, Pa., for an increase in pay from 2½ to 3 cents a bushel, will be passed upon by the Arbitration Board of District No. 135, Knight of Labor, which comprises all the Knights of Labor miners in the United States. In the mean time, work has been suspended at the mines. A decision will be given very soon.

GENERAL MINING NEWS.

ALABAMA.

At the University of Alabama, Tuscaloosa, a school of mines has been established and a course of instruction in mining and metallurgy arranged.

Major E. O. Gordon has bought from J. E. Dubois and others at Blount Springs a half-interest in 3000 acres of coal and iron land in Jefferson and Blount counties, and it is stated that he has a scheme on foot to develop the property.

LAUDERDALE COUNTY.

ALABAMA MARBLE COMPANY.—The capital stock is $100,000. The officers are : W. J. Kernachan, President ; C. B. Eldred, Vice-President ; and J. B. White, Secretary and Treasurer. The quarry is located sixteen miles from Florence and one mile from the Nashville & Florence Railroad.

TUSCALOOSA COUNTY.

TUSCALOOSA COAL, IRON, AND LAND COMPANY.—The company has a capital of $1,000,000. It now owns 5000 acres of suburban land entirely belting Tuscaloosa, and giving ample frontage on railroads and Warrior River, and in addition, 43,000 acres, to which we referred last week. It is the purpose of this company to foster the building of iron furnaces and other industries at this point, and otherwise to improve and develop its property in and around the city.

ARIZONA.

GILA COUNTY.

FAME SILVER.—A rich strike is reported to have been made in the 525-foot level of company's mine, on Quartzite Hill. As soon as the wagon-road to the mine is completed, the company expects to start up its mill, formerly the Centennial, with the view of keeping it running continuously. There is a good showing of ore in the mine and several hundred tons on the dump and in the ore-house.

MOHAVE COUNTY.

GOLDEN GATE.—A St. Louis syndicate has taken up this property, which is located in the Lost Basin District, and partly developed, though none of the ore has ever been mulled. The capital stock will be $2,000,000.

ARKANSAS.

AMERICAN MINING COMPANY.—The company is negotiating for and expects to erect within four months ready for work, a ten-stamp mill, and, during the coming summer, a smelter of 40-ton capacity. It

is pushing work at its mines in Montgomery, Garland, and Saline counties.

CALIFORNIA.

AMADOR COUNTY.

GOLD MOUNTAIN.—This mine has been placed with a St. Louis syndicate. It was worked a number of years ago. One half of the property, it is stated, will be sold for $150,000, and from this a forty-stamp will be added to the ten-stamp mill, and the rest will go to the owners. The property is opened with one 520-foot and one 450-foot tunnel and a number of cross-cuts and winzes.

INYO COUNTY.

COSO.—G. Howard Thompson has sued this company for an accounting, alleging that he recovered a judgment for $1935.60 against the company in January, 1886. A judgment had also been given against the company in 1884 for $981 in favor of J. A. McKenzie, then superintendent of the mine. On this judgment, the sheriff of Inyo County issued a deed of the property to McKenzie. Plaintiff alleges that the directors of the company conspired with McKenzie and allowed him to take judgment by default, in order to defraud plaintiff and other creditors, and that at the time of the suit McKenzie had in his possession $5000 worth of gold dust belonging to the company. The property is said to be worth $150,000, and it is asked that the judgment in favor of McKenzie be set aside and the property be placed in plaintiff's possession as a trust until his judgment has been satisfied.

SANTA CLARA COUNTY.

QUICKSILVER.—This company, which is under the efficient management of Mr. J. B. Randol, has just issued a statement showing the earnings and expenses, etc., for sixteen years from January 1st, 1871, to December 31st, 1886.

EARNINGS.

Quicksilver produced.....317,822 Flasks.		
Average value.....	$35·1134	$11,159,822.55
Miscellaneous...		629,727.65
		$11,789,550.20

OPERATING EXPENSES.

Pay-rolls.....$5,132,519.53		
Miscellaneous and taxes....	705,337.44	
Materials consumed in operation of mines and furnaces.....	1,656,512.95—	7,494,369.92
Balance.....		$4,295,180.28

This balance is accounted for as follows:

There have been expended for improvements.....		885,354,25
Real estate purchased. ..	$14,500.00	
Legal expenses and patents	39.969.62	
"Black" debt of 1870.....	9,342.68—	63,812.30
Profits expended in California ..		$949,166.55
Accounted for by increase in personal property accounts in California, and by consignments abroad		136,288 37
Total profits accounted for in California.		$1,085,454.92
Profits remitted to New York office.		3,209,725.36
Total profits accounted for.		$4,295 180.28
Funded debt and dividends paid in New York as below...		$2,552,453.55
Interest on funded debt, taxes, legal expenses, etc., and assets in New York		657,271.81
		$3,209,725.36

The company is entirely free from debt.

PRINCIPAL OF FUNDED DEBT AND DIVIDENDS PAID IN NEW YORK.

First mortgage gold bonds, paid June 1st, 1873.....	$500,000.00	
Second mortgage gold bonds, paid July 1st, 1879.	1,000,000.00—	$1,500,000.00

DIVIDENDS.

5 dividends, in all $21 per share, on preferred stock, and 2 dividends, in all $265, per share on common stock, making a total of..... ..	1.052,453.55
	$2,552,453.55

Since, a dividend of $1.50 on preferred stock has been declared January 12th, payable February 15th, 1887, $64,369.50.

COLORADO.

QUINCY.—Stockholders representing 55,000 shares have subscribed to put up ten cents a share, payable February 12th. It is feared that the much-needed money will not be raised in this manner, and a bond will probably be placed upon the property to save it from abandonment, or a reorganization will be effected. The latter scheme seems to meet with favor. The capital stock of the Quincy is represented by 300,000 shares, 18,000 of which remain in the treasury, 282 being held by the stockholders.

ARAPAHOE COUNTY.

HOLDEN SMELTING COMPANY.—At the works at Denver, important developments are making that will make the roasting capacity seventy-five tons a day. A Sturtevant mill is being put in the sampler, which will soon be in operation, to crush matte and ore when needed. New bins and new railroad tracks are being put in rapidly. The four stacks are running constantly, treating from 180 to 200 tons of ore daily, not including flux and fuel. Preparations are making to add new stacks early in the spring.

CLEAR CREEK COUNTY.

FREELAND.—The company discharged 100 miners on the 31st ult. The superintendent gives as the reason for such action that, for the last two months, the value of the ore has run down. It was tried to overcome this by producing a larger number of tons, and consequently he drew heavily on the resources. After consulting the principal owners of the mine, it was deemed advisable, and to the best interests of the company, to stop producing for three or four months and prosecute the development-work. All employés were promptly paid, and it is understood that the necessary funds are provided for carrying on the development-work.

SEVEN-THIRTY.—Work was somewhat delayed last month, owing to the preparations for placing a new double hoisting-engine at the main shaft, which has been built by Messrs. Fraser & Chalmers, of Chicago, and will allow sinking to 1500 feet. At a depth of 1400 feet, connection can be made with the Burleigh tunnel, and outlet obtained level with the railroad. From 1500 to 2500 feet of stoping ground will then be available—drained and ventilated. The Burleigh tunnel is in 2300 feet, and has 15 acres of patented ground at its mouth. Twelve hundred feet from the entrance of the tunnel, connection has been made with a drift from the Victoria tunnel, which has given a good circulation of air for both tunnels. In the Seven-Thirty, development is continuously pushed forward. Fourteen drifts and three cross-cuts are at present driving in the workings situated in Brown Gulch.

SILVER AGE.—This mine has been placed in St. Louis. The property is located about two miles from Idaho Springs, and consists of three claims, the Silver Age, Hudson, and Ship Ahoy. They are opened with about 600 feet of development, and ore is mined now. The company to work this property is capitalized for $1,500,000—150,000 shares, 80,000 of which have been placed here at 25 cents a share.

GUNNISON COUNTY.

The St. Louis syndicate, consisting of August Kurtzborn, Joel Swab, A. Alee, L. Bauman & Co., and others, have purchased for $23,000 the Cumberland, Central City, and Homestake mines, located on the Cumberland Ridge, in Pitkin Mining District. The property is gold-bearing, and is only slightly developed. The new owners will incorporate, with the principal office in St. Louis, and will begin development-work early in March, if the weather will permit.

VOLENTEE.—St. Louis people, headed by Mr. Daniel Houser and Mr. Hoyt of the *Globe-Democrat* of that city, and others, have concluded arrangements to purchase the property known as the Volentee, which adjoins the properties above referred to.

LAKE COUNTY.

ADAMS.—It is rumored that the mine has closed down, the company not being willing to make ore contracts at the present smelting rates. It is said that the second contact was low-grade ore that would not pay to work, and for this reason concentrating-works must be erected to work the ores profitably.

HARRISON REDUCTION-WORKS.—The scheme of Mr. Franz Fohr, manager of these works, for further utilizing the slag-dump of the smelter, has been put to a thorough practical test, says the *Herald-Democrat*. About three of the seven and a half acres belonging to the company's mill-site, and comprehending all of the available surface ground in the vicinity, are covered up with slag. Additional dumping-ground had become an imperative necessity, and this not being obtainable, Mr. Fohr devised the scheme now in operation of elevating the slag at the opening of the furnace-room, and dumping on top of the present immense accumulation. This was done by means of a double elevator, not unlike those used in hotels, each of sufficient dimensions to accommodate four slag-pots. To the present surface of the dump, fifteen feet of slag can be added, and when it is entirely covered to that depth, the elevator plant can be hightened another fifteen feet, and another layer added. The appliance works well and requires but little power.

IRON SILVER VS. CROWN POINT AND PINNACLE.—This suit, to which we referred in our last issue, and which has been before the court at Denver for a week, came to a conclusion on the 28th, with a verdict for the defendants.

QUEEN CONSOLIDATED.—Negotiations for the sale of this mine have at last been brought to a successful conclusion, and the greater part of the stock is now held in St. Louis. The company will have offices in that city. No stock will be placed on the market, as the present owners intend supplying all the funds necessary for the further development of the mine.

TIP TOP VS. FOREPAUGH.—A suit for $200,000 has been brought by the owners of the Tip Top against the Forepaugh Mining Company to recover the value of ore said to have been taken from the Tip Top property by the Forepaugh. The case was given to the jury on the evening of the 31st. It is stated that this is not the only suit to be filed, as the Tip Top claimed that even larger amounts than $200,000 worth had been taken illegally by the Forepaugh, which is charged with having mined beyond its lines into the boundaries of the Tip Top. When the Tip Top shaft was sunk, the workmen discovered that they were very close to the workings of the Forepaugh, and the court was asked to have an examination made. The court issued an injunction against the Forepaugh Company, to restrain it from mining in the disputed part of the claim. Two experts were sent into the mine by the court, and after making an underground survey, they reported that the Forepaugh had taken $320,000 of ore from the Tip Top. The latter company was preparing to file suit, when the Forepaugh, disregarding the injunction of the court, began mining again in the contested ground, and the Tip Top made a second application, and had a second injunction issued. It has not been officially stated, but it is probable that suit will be brought for an additional $120,000 and for ore taken out since the first injunction was granted.

PITKIN COUNTY.

ASPEN SILVER MINING COMPANY.—This company's property consists of three claims, the Iron, the Bond, and the Silver Knight. It is developed through a shaft on the Silver Knight, which has attained a depth of sixty-five feet, the bottom being in mineralized porphyry. The group is located on the east slope of Aspen Mountain.

DURANT.—The owners are making preparations for working their property on a very extended scale. The management has just purchased a forty horse-power boiler and a twenty-five horse-power engine. The plant will be located at the mouth of the old Visino tunnel, from the level of which an incline is running on the ore-deposit.

PUEBLO COUNTY.

COLORADO COAL AND IRON COMPANY.—The company is making preparations to reconstruct and open the big ditch that runs from the stone bridge, six miles above Pueblo, to the St. Charles River, six miles below that town. This ditch will put under irrigation about 15,000 acres of good land that is now valueless. It will cost about $75,000 to put the ditch in good condition.

SUMMIT COUNTY.

QUEEN OF THE WEST.—This company, to which we referred last week, has a capital stock of $3,000,000, shares $10 each.

DAKOTA.

PENNINGTON COUNTY.

MONARCH HYDRAULIC MINING COMPANY.—This company has been organized at St. Paul, Minn., with a capital stock of $1,000,000, by Henry M. Carter, John M. Gilman, M. D. Man, of St. Paul, and Charles Girdler. The ground to be worked by the company is near the head of Spring Creek, at the south line of Pennington County.

IDAHO.

ALTURAS COUNTY.

KEY.—This company has been organized with a capital of $1,000,000, shares $1 each, to work the Nannie R. and Iron Queen, in the Wood River District. The property has a seventy-foot shaft, opening a five-foot vein of ore.

ILLINOIS.

MADISON COUNTY.

ST. LOUIS NATURAL GAS AND OIL COMPANY.—This company has been organized at St. Louis, with a capital stock of $25,000, shares $100 each. The object is to prospect for and bore for natural gas, oil, or petroleum; to stow away the same, and to pipe to any point or points desired, and to dispose of the same for the purpose of fuel or lighting. The incorporators are: T. A. Meysenburg, of the Tudor Iron-Works; Gen. J. S. Fullerton and E. K. Holton, of the St. Louis

Shovel Company; W. F. Niedringhaus, of the St. Louis Stamping Company; G. B. Crane, of Edwardsville; and W. E. Barnes, editor of the *Age of Steel*. When gas is found in paying quantities, the capital stock will be increased to such amount as will be necessary to conduct the business on a large scale. Work on the gas well at Edwardsville has not progressed as rapidly as was anticipated. It is thought more than likely that the ninety-foot gas will be struck by the latter part of this week. The base of the gas and oil supply is a gravel just above the Trenton limestone, some 1700 feet deep.

INDIAN TERRITORY.

The Interior Department is pressed by those interested for some definite declaration as to coal mining in the Indian Territory. The Attorney-General has given an opinion that the contracts between outside parties and the Indians to mine coal are illegal. The Interior Department is non-committal, and has done nothing. The effect of the negative policy has been to make capital timid. At some places, operations have been suspended. At others, the mining is going on. The result is scarcity and high prices in Texas, which depends on the territory for its full supply.

INDIANA.

DELAWARE COUNTY.

KUHN & HIGHLAND.—This gas well, at Muncie, drilled in on January 29th, is said to be one of the largest wells yet struck in the State.

GRANT COUNTY.

MISSISSINEWA.—This company has been organized at Marion, with a capital stock of $100,000, for the purpose of putting in a plant to supply manufacturing establishments and private consumers with the natural gas developed at Marion, for heating and lighting.

IOWA.

ZERO.—George H. Brace and C. C. Carpenter, of the Dakota National Bank, of Sioux Falls, Dak., have sold a three-fourths interest in this coal mine to J. E. Riley, of Omaha, for $32,000.

KANSAS.

MIAMI COUNTY.

PAOLA NATURAL GAS COMPANY.—The mayor of Paola has ordered the committee on light and heat to purchase fifty street-lamps, to be used on the main thoroughfares of the city, illuminated by natural gas.

MEXICO.

The Mexican *Financier* reports the following:

ANTLAN.—This company has been organized in the City of Mexico, to work seventy mines in the State of Jalisco, which are now in *amparo* and will be until the 31st of December of the present year. Of the 70 mines, 36 are gold, producing ore that yields 35 ounces of gold to the ton. The company is about to begin operations, and the promise for a good output at an early date is good.

LA BLANCA.—This mine at Pachuca is looking well as respects metal. No. 2 end driving east toward the new shaft is looking very well, and renders the mine more valuable. The shaft now being 50 yards below the upper level, will be driven to intersect the level going east.

ROSARIO VIEJO.—This property is giving about 100 cargas a week. This leaves a profit on the small amount of work doing. The end going east continues to look well for the future of the mine, which is situated in the Pachuca District.

SAN CAYETANO EL BORDO.—It is reported that this mine, at Pachuca, has made a good discovery in ore in the end driving east on a vein north of the shaft. They expect to extract 1000 cargas of good ore each week.

SANTA AÑA.—Owing to a strike in the Cayetano El Bordo, which adjoins this mine, the owners of the Santa Aña mine have had a general meeting, and have determined promptly to carry out works to cut the ore in their set, and for that purpose will subscribe $100 per barra a month.

SANTA GERTRUDIS.—This property at Pachuca continues to look well. In the No. 7 level driving east, the vein is wide, with about 4 feet of good ore. No. 11, which is in the Amistad set, continues in good metal and improved ley. There is no reason why dividends should not begin to be paid by this mine.

TABOR.—This American company, operating a mine at Jesus Maria, State of Chihuahua, has been compelled to suspend operations owing to litigation, some of the Mexican owners in the property having brought about legal proceedings

MICHIGAN.

IRON MINES.

BLUE IRON COMPANY.—This company has been organized with a capital stock of $1,000,000, shares $25 each, with the following officers: N. M. Kaufman, President; A. S. Parks, Vice-President; S. R. Kaufman, Secretary and Treasurer. The main office will be at Marquette. The company owns the option and is to operate the mine recently discovered by N. M. Kaufman about one mile east of Negaunee. The mine is showing up very favorably.

JACKSON.—The controlling interest in this company has been secured by Stone, Chisholm & Jones, of Cleveland, and Samuel Mitchell, of Negaunee, for, it is reported, $1,440,000. The Jackson Company owns the furnace at Fayette, on Lake Michigan, and large tracts of mineral and timber lands. The new management will largely increase the output of iron ore this year. It is said that this mine was opened in 1852, and 2,597,958 tons of iron ore were mined from it up to December 31st, 1886.

NEVADA IRON MINING COMPANY.—This company has been organized to operate on the southwest quarter of the northeast quarter of section 15, town 47, range 44.

STANDARD IRON MINING COMPANY.—This company has been organized at Hancock, with a capital of $2,000,000, shares $25 each. The lands owned by the company are west of Sunday Lake, in the Gogebic District, and embrace those formerly held by the Jumbo, which organization is merged in the Standard.

COPPER MINES.

CALUMET & HECLA.—The Marquette, Houghton & Ontonagon Railroad is now shipping copper at the rate of ten cars a day for account of this company, and it is understood that the shipments will continue through February if carried on at the above rate. Later and more accurate estimates of the loss occasioned by the burning of the round-house place the damage at from $30,000 to $35,000. Two of the burned locomotives will prove a total loss, and orders have already been given the Mason Works, at Taunton, for two new forty-five-ton engines to replace them.

NATURAL GAS.

ST. CLAIR LIGHT AND FUEL COMPANY.—This company, which is composed mainly of Pittsburg capitalists, has brought in its third gas well near Port Huron. The well shows a pressure of about 250 pounds, and was struck at a depth of 1000 feet. All three of the company's wells are within a few miles of the city limits of Port Huron. Preparations are making to pipe the town next spring.

MINNESOTA.

RAMSEY COUNTY.

ST. PAUL HEAT AND POWER COMPANY.—This company, to which we referred in our issue of October 30th, has put in a boring plant on a piece of property between St. Paul and Minneapolis, and begun operations.

MISSOURI.

JACKSON COUNTY.

A company has been formed with a paid-up capital of $20,000, to bore for coal and natural gas at Randolph Bluffs.

ST. LOUIS COUNTY.

There is a movement on foot at St. Louis to establish a mining bureau, the purpose of which will be to furnish reports on mining properties. The local papers state that the plan provides for an expert in each of the principal mining camps of the country, who may be called upon to examine and make a report upon any property that is offered for sale or which the stockholders may wish to have examined. In addition to this, there will be experts regularly employed by the bureau to travel from point to point in this or any other country to investigate properties. A record of all the mines listed on the principal exchanges will be kept, and daily telegraphic quotations will be received. In connection with the bureau, will be an assay office for testing ore, and samples of the ore from the principal mines of the world will be obtained. In the reading-room, will be works pertaining to mining and maps of the principal districts of the country. The bureau will issue a quarterly pamphlet containing a general review of the mining industry, the values of stocks, dividends declared, and a report of the workings of the recognized mines for the quarter under consideration.

MONTANA.

DEER LODGE COUNTY.

WEST GRANITE.—A circular has just been issued stating that the company had sold to its trustees and others, during the eleven months of its organization, stock to the amount of $60,000; that the company has acquired since its organization other mining claims (the Elizabeth, Daisy, Comet, Butte, and Clear Grit quartz lodes, and the Virginia and Rattlesnake millsites) adjacent to its property, and for which it has paid $11,500; that the company still has in its treasury 90,000 shares of stock, and ample funds to cover all estimated expenses for the next two months; that there is not one dollar of indebtedness of any kind that is known to the company's officers, except for the current expenses of January, 1887; that the new plant of the company (hoist, machinery, etc.) just completed will enable it to thoroughly prospect the Rattlesnake lode to a depth of 1000 feet, and that a shaft for this purpose is sinking as rapidly as every convenience will permit, the management contemplating a cross-cut at a depth of 250 feet; that there is no reason to doubt that the treasury stock of the company can be sold as rapidly as the necessities of the company may require; and that there has not been a single day since the organization of the company that has seen a cessation of well-directed labor on the property.

GALLATIN COUNTY.

LIVINGSTON COAL AND COKE COMPANY.—This company is now burning and shipping to the reduction-works at Wickes an average of two and a half cars of coke weekly. It has in operation four only out of the twelve ovens the plant will contain when completed. The coke thus far produced has been equal quality, it is said, to that shipped from Pennsylvania, and for smelting purposes is giving the best satisfaction. The company intends to complete the remainder of its plant as soon as practicable, and if it is then unable to supply the demand for this article, will further increase its coke-burning facilities.

JEFFERSON COUNTY.

HELENA MINING AND REDUCTION COMPANY.—The new concentrator will be running soon. The new smelting plant has been closed down a little of late, owing to the scarcity of lead ores for fluxing, which, it is stated, was produced by the lack of transportation facilities in the Cœur d'Alene country.

SILVER BOW COUNTY.

The Supreme Court has rendered opinions in thirty-six appealed lawsuits, celebrated in court annals as the Smokehouse cases. They originated in a contest for the possession of ground covered by the town-site of Butte City. This ground was first taken up as mining property in various quartz locations, the principal one, and upon which a great part of the city of Butte is built, being the Smokehouse lode, from which the litigation has taken its name. After the town-site was laid off, those interested in each very naturally came in conflict as to their claims. The suits have all come before the District Court, which has uniformly decided in favor of the mining locations, and on the 22d ult., in the Supreme Court, this judgment was affirmed throughout.

NEVADA.

ELKO COUNTY.

NORTH BELLE ISLE.—Legal proceedings were instituted at San Francisco, on the 24th ult., in the Superior Court, by L. Jacobi, against the directors of the North Belle Isle Mining Company. The action is collateral to the suit now pending against the said directors, to recover $277,342.80, the value of 42,488 shares, which were sold to J. F. Cassell, for the alleged inadequate sum of $6072.20. The complaint asserts that at the last annual meeting, held on the 23d of June, 1886, a majority of the stock was not represented; that defendants falsified the records, made it appear that a majority of the stock was represented, and elected themselves directors. They then authorized themselves to sell all shares remaining in the treasury, amounting to 40,488, for such price as they might deem fit, and accordingly transferred the stock to J. F. Cassell. The complaint alleges that, previous to the annual meeting, a large body of ore was discovered in the company's mine; that the superintendent of the mine made it known to the defendants, as individuals; and that they thereupon entered into a conspiracy to obtain the stock at less than its real value. It is asked that the vote disposing of the shares be declared null and void, and that the shares revert to the company.

STOREY COUNTY—COMSTOCK LODE.

We condense the following from the Virginia City *Chronicle:*

ATLANTIC CONSOLIDATED.—After a shut-down of ten years, operations at this property have been resumed. The property is located in American Ravine, a short distance west and north of Silver City. The main tunnel will reopened, in which is a vein of gold-bearing quartz that was exposed before the mine was shut down in 1877.

BULLION.—A west drift is going out from the station excavated on the 200 level, the cost of which will be borne by the West Potosi management. An east drift will be sent out from the same level in the shaft, as a base of operations for exploring the north end of the Bullion at the Potosi south line.

CHOLLAR.—The rumor that drill-holes are going out into Chollar ground south of the Hale & Norcross line and that high assays are obtained from the core, is denied at local head-quarters.

CONSOLIDATED CALIFORNIA & VIRGINIA.—During the week ended the 22d ult., 944 tons of ore were shipped to the Morgan mill, and 1461 tons to the Eureka mill. The average assay value of all the ore worked at both the above mills during this period, according to battery samples, was $41.94. The total number of tons of ore shipped during the past week fell slightly below the total shipment during the week previous. This was due to the decrease of water in the Carson River, caused by the freezing weather. Bullion valued at $113,000 was shipped on the 23d ult. to San Francisco, this being the second shipment on January account, making a total of $210,000.

GOULD & CURRY.—On the 425 level, the east drift started at a point in the lateral drift 420 feet from the main west drift. The face is a mixed formation of quartz and porphyry, the former showing value by assay. The uprise started from the south drift at a point 425 feet south of the main west drift is in a mixture of porphyry, clay, and quartz, showing value by assay at almost all points. There are streaks of ore mingled with the mass that assay well.

HALE & NORCROSS.—Ore is said to show in a cross-cut from the north drift on the 1200 level. The south drift on the same level is alleged also to have entered ore.

POTOSI.—On the 200 level, the cross-cut sent in south of the Lindsay drift shows ore for 70 feet along its course. It is now penetrating the east clay lying next to the hanging-wall of the vein. It is stated that this mine will be numbered among the most important bullion-producing mines on the Comstock as soon as facilities are obtainable for crushing the ore now exposed above and below the 250 level.

SAVAGE.—Ore is stoped out from the new development between the 500 and 600 levels. The north and south drifts from the Sutro Tunnel level on the 1640 level are advancing along the vein.

UTAH.—This company has increased its capital stock from $2,000,000 to $10,000,000, or at the rate of five shares for one, and will now be known as the Utah Consolidated. Holders of stock in the old corporation will receive five shares of the new for each one they hold in the old company. This action is in compliance with the statute that provides that the assessments levied by mining corporations shall not exceed in the aggregate the amount of capital stock. The total assessments levied to date foot up $1,570,000.

NEW MEXICO.

GRANT COUNTY.

BREMEN.—It is stated that this company intends to spend $120,000 in erecting a 100 stamp mill. A ten-stamp mill has just been removed, and fifteen heavier stamps put in, and the intention is to add eighty-five more. The new stamps have started up, and work smoothly.

SOCORRO COUNTY.

LACLEDE.—The report just made by Mr. Frank Nicholson is not favorable. He states that the vein is a true fissure, between well-defined walls, but the ore is of a low grade, that will not stand shipping from Cooney at the present cost. The cost of hauling to the railroad is $20 a ton; freight to smelter, $13; treatment, $15; mining and other expenses, $20; making a total of $62 a ton. He also says that the development-work has been very badly done. It had opened the ledge, but it will not serve for permanent work, and the developments will have to be begun over again. In view of this report, the company intends to open negotiations with the Sheridan Company, looking to a leasing of the Sheridan mill, so that the ore can be reduced in the camp.

NORTH CAROLINA.

CHATHAM COUNTY.

The Department of Agriculture of North Carolina has recently had the Deep River coal-field, in this county, explored, and probably as a result of that exploration the district is now coming into prominence. This field has many advantages. It is not only convenient, but in direct communication with Eastern Carolina, and within easy reach of the seaboard at New Berne, Morehead, and Wilmington, in North Carolina, and at Charleston, S. C. The cost of mining is placed by the expert at $1.50 a ton, which is rather high when compared with the prices that obtain elsewhere; but it is accounted for from the fact that the work must be done "below the water-level and on a moderately steep dip, the coal must be hoisted, the water raised," etc. Even these disadvantages do not reduce the calculated profit of the coal when advantage of location is taken into account. For example, at Weldon the margin would be from 70 cents to $1 on the ton; Raleigh, $1.50 to $1.80; Greensboro', $1.47 to $1.77; Salisbury, 75 cents to $1; Columbia, S. C., 80 cents to $1; and Fayetteville, N. C., from $2.25 to $2.50. "These figures," says a correspondent of the Baltimore *Manufacturer*, "are large enough to show that a very considerable reduction could be made in the price of coal and yet leave an ample profit for the operator." As to the area, it is estimated at 2160 acres. This may be reduced to say about one half, as no allowances were made for trap dikes or thin spots in the area. This area is calculated to yield 5000 tons to the acre. At Egypt, a Pennsylvania company has purchased a large area of this field, and proposes to begin operations there in the early future. It will begin by supplying local demands, and gradually broaden the business. There are also other parties contracting for the Ore Hill iron mines near, for the purpose of operating largely. It is expected that they will erect blast-furnaces and conduct the work on a large scale.

FRANKLIN COUNTY.

PORTIS.—The property is about to change hands. It has been very properly worked by both hydraulic and mill methods. In the new management, it is understood that both methods, with some improvements, will again be used.

PENNSYLVANIA.

COAL.

It is stated that the Western Pennsylvania coal operators are arranging the details of a plan to make coke from slack or refuse coal. There is no market for this slack, and at many mines along the Monongahela it is simply dumped into the river. Thousands of bushels from the railroad mines are thrown over some near embankment. There are several small works in successful operation. The coke is not so good as the Connellsville coke for all purposes, but it sells, it is said, for 25 cents less on the ton.

CLEARFIELD BITUMINOUS COAL COMPANY.—A mortgage was filed on January 29th at Clearfield, from the Clearfield Bituminous Coal Company to the Knickerbocker Trust Company of New York for $1,650,000.

CONNELLSVILLE COKE AND IRON COMPANY.—The company has begun sinking a shaft for a new works about half-way between the Leisenring Works Nos. 1 and 2, near Uniontown. The shaft will be 500 feet deep, and the company will build 500 ovens at the same time, so as to have the works finished by midsummer. About 100 houses and a store will be built.

H. C. FRICK COKE COMPANY.—The second annual statement of the relief fund of this company's employés has been issued. During the past year, 274 persons have received benefits amounting to $6087. The monthly assessments have been but 15 cents; but as the cash balance is but $203, an assessment of 25 cents will be laid this month to bring the balance up to $1000, as is required by the rules. The report recommends more care on the part of the committeemen in looking after the beneficiaries.

STANDARD.—An entry is driving from the foot of the Standard slope, Mount Pleasant, to the new air-shaft, near Mellingertown, where an engine and boiler will be placed with a drum and a steel cable about one mile in length, which will take the place of mules in hauling the trips, as soon as completed.

NATURAL GAS.

COLUMBIA GAS LIGHT AND FUEL COMPANY.—Dr. A. G. Egbert, on the 31st ult., made an application for the appointment of a receiver for this company. A preliminary hearing has been held, and will be continued to February 11th at Warren.

GRAPEVILLE NATURAL GAS COMPANY.—This company, which has been in existence for some time, with a capital of $100,000, has increased its capital to $1,000,000, Philadelphia and Pittsburg capitalists becoming interested in the enterprise. The company will construct a gas main from the southern end of the Grapeville District through the entire coke belt, including the Connellsville, Scottdale, Uniontown, and Brownsville districts. The main line, to be built of eight-inch and ten-inch wrought-iron pipe, will be over fifty miles long, and branches will be run to Mount Pleasant, Broadford, and all the other coke towns of any size in the region, making the entire system of pipe line not less than 100 miles in length. The main office will be in Pittsburg. The larger part of the pipe has been contracted for, and work will begin on the main line soon. Several new wells will be drilled in the Grapeville District this spring.

PEOPLE'S NATURAL GAS COMPANY.—The new eight inch line from Murrysville to Pittsburg has been opened. The line connects with the city mains at Wilkinsburg, and is twelve miles in length.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to January 29th:

	1887. Gallons.	1886. Gallons.
From Boston	508,400	325,889
Philadelphia	9,663,573	9,049,920
Baltimore	762,198	398,178
Perth Amboy	1,605,465	.....
New York	29,768,472	30,936,765
Total exports	42,308,108	40,737,752

A syndicate that proposes drilling for oil and gas near Braddock has leased about 200 acres in that locality, belonging to Messrs. Cook, Shaefer, and Hemphill, and proposes beginning to drill about the middle of March. By the terms of the lease, the leasers are paid $200 for each well bored, productive or dry, and $500 for each producing well, and one half the profits of all the wells. In case operations are not begun before March 18th, the lessees forfeit $200 to each of the farmers.

TENNESSEE.

TENNESSEE, COAL, IRON, AND RAILROAD COMPANY.—The official report for January shows that there were received directly from the mines 13,526 tons of coal and 13,120 tons of coke.

DAVIDSON COUNTY.

The marble quarry of W. T. Davis, M.D., at Goodlettsville, has been leased to Reiley Brothers, of Louisville, Ky., and from the character of the stone so far quarried, it will prove a valuable quarry. The stone is used to build coping for bridges, etc. On the farm of Mr. V. L. Cunningham, near Goodlettsville, a well that was bored about two years ago for water proved to be a gas well, and has burned ever since when lighted. A strong company is forming, and has taken options on surrounding farms, and will soon begin operations boring for natural gas.

UTAH.

WASHINGTON COUNTY.

STORMONT.—Operations at the mill have been suspended and will probably last several months, in order to permit of proper prospecting of the company's properties, which has long been necessary. The force of miners has been reduced to fifteen men, who are now doing dead-work. We referred to this in our issue of January 15th.

VIRGINIA.

PULASKI COUNTY.

BERTHA ZINC COMPANY.—Mr. George W. Palmer has made arrangements to develop the Bertha Zinc Company property at Pulaski City, Va. It is now running two furnaces, and two more will be ready to put in blast by the 10th of February. It is expected to build six new furnaces and have them in blast by the 1st July next. This will enable the company to make 10 tons of pure spelter a day. It has lately sold 200 tons of metal to be shipped to Russia for cartridge metal.

WEST VIRGINIA.

WHEELING MINING AND MANUFACTURING COMPANY.—This company has been organized at Wheeling, for the purpose of mining coal, manufacturing fire, building, street, and sidewalk brick, and dealing in lime, sand, tile, etc., and of doing a general contracting and brick-building business.

WISCONSIN.

That the mining fever is running high in Milwaukee is indicated by the records of the register of deeds' office, as well as by those of the Secretary of State, at Madison. During the past year, fifty iron mining companies, with an aggregate capital stock of $67,318,000, an average of about $1,300,000 to each company, have been incorporated in Milwaukee. The number of iron mining companies incorporated in that city during 1885 was just three, with an aggregate capital stock of only $1,025,000.

A bill to create the office of Commissioner of Mineral Statistics for the State has been introduced in the Legislature. The bill provides for the appointment of a commissioner by the governor, the salary, which includes cost of publishing report, to be $3000.

The following companies have just been organized under the laws of this State:

AKRON IRON MINING COMPANY.—This company has been organized at Milwaukee, with a capital stock of $1,000,000, by Anthony Koenen, Frank B. Wagner, W. J. Turner, P. D. Hall, Jr., and C. C. Ruthrauff.

CAPITAL IRON SYNDICATE.—This company has been organized at Madison, with a capital stock of $2,500,000, by Phillip L. Spooner, Jr., F. W. Oakley, Daniel Campbell, and W. S. Main.

CHIPPEWA FALLS IRON AND UMBER MINING COMPANY.—This company has been organized, with a capital stock of $200,000, by L. J. Newald, John Weiner, and D. McCoy, of Chippewa Falls.

CLINGSTONE IRON MINING COMPANY.—This company has been organized at Milwaukee, with a capital stock of $1,000,000, by Henry C. Hopkins and James M. Fox, of Milwaukee, and George A. West, of Racine.

CLINTON IRON SYNDICATE.—This company has been organized at Wasau, with a capital stock of $5,000,000, by M. P. Bube, F. P. Stone, and Daniel McDonald.

ESMERALDA IRON MINING COMPANY.—This company has been organized at Eau Claire, with a capital stock of $1,000,000, by C. A. Sleeper, of Ashland; Thomas Smith, and F. J. Matchette, of Eau Claire; and H. J. Coy and Francis Rotch, of Bloomer.

FLORENCE MAY MINING COMPANY.—This company has been organized at Milwaukee, with a capital stock of $1,000,000, by Anthony Koenen, Frank B. Wagner, W. J. Turner, P. D. Hall, Jr., and C. C. Ruthrauff.

MARGARET.—This company has been organized at Hurley, with a capital stock of $1,000,000, by R. H. Vanner, Willard Fuller, and I. H. Bushnell, of Ashland County.

PENINSULAR IRON MINING COMPANY.—This company has been organized at Rice Lake, with a capital stock of $1,000,000, by D. M. Montieth and S. Montieth, of Rice Lake, and F. W. Hartman, of Milwaukee.

QUEEN MINING COMPANY.—This company has been organized at Eau Claire, with a capital stock of $1,000,000. The incorporators are C. A. Sleeper, of Ashland; Thomas Smith and F. J. Matchette, of Eau Claire; and H. J. Coy, and Francis Rotch, of Bloomer.

VERMILION IRON MINING COMPANY.—This company has been organized at Milwaukee, with a capital stock of $2,000,000, by Henry C. Hopkins and James M. Fox, of Milwaukee, and George A. West, of Racine.

MARKETS.

NEW YORK, Friday Evening, Feb. 4.

Prices of Silver per ounce troy.

Jan	Sterling exchange	Lond'n Pence.	N. Y. Cents	Feb.	Sterling exchange	Lon'd'n Pence.	N. Y. Cents
29	4.87	47¼	102¾	2	4.88	47	102⅛
31	4.87⅛	47 1-16	102⅝	3	4.88	47	102⅛
Feb 1	4.88	47	102½	4	4.88	47	102⅛

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, reduced the minimum rate of discount from 5 to 4 per cent. During the week, the bank gained £599,000 bullion; and the proportion of its reserve to its liabilities was raised from 46·96 to 47·70 per cent, against 45⅛ per cent at the same time last year. The weekly statement of the Bank of France shows gains of 750,000 francs gold and 4,025,000 francs silver. The weekly statement of the Imperial Bank of Germany shows a specie increase of 16,420,000 marks.

Copper.—The market during the week has been very quiet; only a few transactions were made at prices ranging from 11·15@11·20c.; to-day, 11c. bid, and 11·40c., asked. But while Lake is firm, inferior brands are unsteady. Chili Bars in London, in spite of the war scare, are £38 15s., rather firmer.

Telegraphic advices to us from Butte state that the Anaconda Smelting-Works are again idle, and all men, except those employed in exploration, discharged from the mine. American shipments must, therefore, continue to be confined to small parcels of Lake, which, from its peculiar properties, certain French houses must have at any price.

Tin.—Transactions were very large during the week. Sales of 530 tons were recorded at the Metal Exchange, at prices varying between 22·40c. and 22·70c., closing to-day at 22·40c.

The London market shows sales of only 335 tons. Cable advices to the Exchange to-day quoted spot Straits £101 2s. 6d., and for futures £101 17s. 6d.

Lead.—Since our last issue, the lead market has turned right about face, and has advanced steadily. There was but a single sale at 4·25c. About 100 tons sold at 4·30c., and another 100 at 4·45c., thus establishing an advance of nearly 25 cents on a minimum of business. At the close, 4·50c. is the general asking price for spots and futures, while a few small lots are offered at 4·45. Buyers are either timid or indifferent, and bid sparingly at 4·40c., and there seems to be no immediate chance of any thing more than a jobbing trade.

Messrs. John Wahl & Co., of St. Louis, telegraph as follows to-day:

The market is very sensitive and gradually ascending under light sales. We quote at close 4·15c. bid and 4·20c. asked.

Messrs. Everett & Post, of Chicago, telegraph as follows to-day:

There has been considerable more inquiry for both hard and soft lead, in consequence of which, sellers have been asking a little more; but only a moderate amount of business has been transacted. Sales for the past week will probably foot up 600 tons, at from 4·10@4·20c. Latterly, offerings are only moderate, and refiners are bullish in their ideas; 4·20c. bid, 4·25c. asked.

Spelter.—The London market by cable advices to-day shows that prices are unchanged, remaining at £14 10s. for Silesian. We quote 4·40c. for spot and February and March in store for Western brands, and 6½@7c. for New Jersey.

New Jersey Zinc Oxide, 4@4½c., according to grade.

Antimony.—Cables to the Metal Exchange to-day quote Hallett's at £30. The market here remains at 7½@7¾c. for Hallett's and 9c. for Cookson's.

Quicksilver.—Prices remain unchanged at from 53@54c. a pound here, and in London £7 7s. 6d.

Nickel.—We quote 60c.

Aluminium—Is quoted at 90c.@$1 an ounce.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 4.

American Pig.—The market is firm, and sales of small lots only are recorded. We quote for standard brands, No. 1 X, $22@$22½; No. 2 X, $20.50@$21; Forge, $19.

Scotch Pig.—There have been no new arrivals so far this week. We quote Coltness, $23.50; Summerlee, $23; Clyde and Dalmellington, $21@$21.50; Gartsherrie, $22.50@$23; Glengarnock, $22@$22.50; Eglinton, $21.

Cables to the Metal Exchange to-day quote: Coltness, 58s.; Langloan, 54s.; Summerlee, 56s.; Gartsherrie, 52s. 6d.; Glengarnock, 52s.; Dalmellington, 48s.; Eglinton, 46s. 6d.; Warrants, 45s.; Middlesboro', No. 3, 36s. 6d. Freights are 10s.

Bessemer Pig.—One sale of several thousand tons was made; we quote $19.50@$20.50 at furnace for Domestic. Foreign is $20.50@$21.50.

Spiegeleisen.—There is little doing, and prices remain at from $27.50@$28.50 asked for both English and German 20 per cent Spiegel, $33 for 30 per cent.

Steel Blooms and Billets.—Some activity was displayed in this market, and sales of several thousand tons are reported. Prices continue at from $30@$30.50 for Rail Blooms. Billets, $32@$33, according to size and quality. Nail Slabs, $32.50@$33.50. American Charcoal Blooms, from $54@$56. Scrap Blooms, $35@$36.

Steel Rails.—There is said to be a fair demand. The market on the whole is quiet and firm. We quote $39@$40 Eastern mills. For English rails, we quote $40@$41.

Structural Iron and Steel.—This market shows a more active feeling. We quote: Bridge Plate, 2·4@2·5c.; Angles, 2¼@2½c.; Tees, 2½@2¾c.; Steel Angles, 2·5@2·6c. American Beams and Channels, 3.3c., base from dock.

Steel Plates.—We quote: Tank, 2·75@3c.; Boiler and Ship Plates, 3¼c.; Flanges, 3⅛@3¾c.; Extra Flange and Fire-Box Plate, 4½@4¾c.

Merchant Steel.—There is no change from the Association rates. We quote: American Tool Steel, 7½@10c.; special qualities, 11@20c.; Crucible Machinery, 4@4·5c.; Bessemer and Open-Hearth Machinery and Spring, 2·7c.; Sleigh Shoe, 2·4c.; Open-Hearth and Bessemer Cutlery, 3·2c.

Plate Iron.—We quote: Common Tank, 2·45@2·50c.; Refined, 2·50@2·60c.; Flange Iron, 3·7@3¾c.; Extra Flange, 4·25@4½c.

Bar Iron.—We quote: Refined at 2·25@2·50c.; Common, 2@2·10c.

Cast-Iron Pipe.—We quote $30 for 36-inch pipe, up to $37 per ton for 4-inch.

Rail Fastenings.—Prices have advanced for Spikes to 2·70c. a pound; Angle Fish-Bars remain at 2¼c.; Bolts and Nuts at 3⅛@3¾c.

Scrap.—The market is quiet, and only sales of small lots were made. We continue to quote $24@$26 for Wrought Yard Scrap. Foreign Scrap is offered at $23.50.

Old Rails.—There has been a weaker feeling, and prices stand for Double-Heads at from $22.50@$26, and for Tees at $25.

Philadelphia. Feb. 4.

[From our Special Correspondent.]

Pig-Iron.—The fever is over, and both makers and buyers are now quietly studying market probabilities. Sales of Foundry Nos. 1 and 2 count up, so far as sales can be got at, 12,000 tons for spring and early summer delivery, at $22.50 and $20, though some sold at lower prices. Forge iron is quiet at $18@$20, the average at $19. No Southern iron is asked for.

Foreign Iron.—Brokers assert that importations at to-day's prices are out of the question. Offers have been received by two or three brokers, and they are sounding the ground. Bessemer is quiet at $21.50@$22 asked, and Spiegel, $28.50. Rail Blooms, dull at $30.50, and Billets and Slabs, at $33@$35.

Muck-Bars.—One lot was ordered at $35 mill.

Manufactured Iron.—Base price is 10c. for Refined. Medium iron, 2c. Business fair. Small lots, aggregating 700 tons, have been heard of since Monday, but much more business has been closed.

Plate Iron.—Large makers have specifications on hand to-day, and a continuance of the heavy demand is probable on a 2½c. base for iron, and 3¼c. for steel. Flange and Fire-Box are taken freely.

Wrought Pipe.—The buyers are around in force, and are anxious to cover before any further advances shall be made. Skelp mills are loaded up, and prices are very firm.

Nails.—The demand prevents any thing like an accumulation of stocks, and makers' prices find no opposition.

Structual Iron.—Abundance of business, counting up into the hundreds of tons daily, is coming in. Some two or three mills are sold up close for five or six weeks. Angles, 2·25c.; Beams and Channels, 3·25@3·50c.

Merchant Steel.—Small lots early delivery are not to be had except at a little advance.

Hardware.—The orders sent to parties for spring delivery represent an active condition of the market.

Steel Rails.—Rumors reached this market of the closing of contracts for foreign rails, but they can not be authenticated. Mill quotations are given at $39.50@$41, but the large buyers are waiting for something to turn up.

Old Rails.—For Tees, $25, and for Doubles, $26. Buyers are ready to buy freely at $24.50@$25, and brokers report to-day quite an increase in interest in the old rail market for future shipments.

Scrap.—Crop-Ends, $21@$21.50, sale at $21.25, and offers at $21. Cargo Scrap is offered at $24.50; No. 1, $25. Business is restricted to small lots at present.

Those who are interesting themselves in English pig importations predict the placing of several large orders in a few days; but American makers deny that there is as much danger as importers speak of. The Pennsylvania pig-iron interests will not let in English iron if they can help it.

Pittsburg. Feb. 3.

[From our Special Correspondent.]

While activity in pig-iron is general, there is not so much feverish anxiety among consumers large and small. The question now is, Will prices advance or

have they reached their limit? Of course, there are two parties interested in this question, with a slight difference as to the result. The advance in coke, freight, labor, etc., will increase the cost of metal about $1.32 a ton. Now, this increase will have to be borne by one side or the other; or will they make a divide? It is yet too soon to ascertain how it will be decided. Up to the present time, trade has been moving along satisfactorily. Both sides seem satisfied. A short time will probably solve the question. The position of the market is such, however, that a few days may easily bring about another change, probably toward higher figures, although, if there comes any slackening in the demand, quotations may readily slide down a shade, which would, in such an event, cause buyers to enter the market. As to the chances, sellers claim that large customers are running their contracts through rapidly, and will soon be forced into the market for a fresh supply, and a new scale of prices may be adopted. The sales of raw iron in this market exceed any thing ever known here. There has never been any thing like it, and, what is better, it is all for consumption, and principally for cash. City furnace iron stands at the top of the list, so far as relates to prices or demands. Imported iron, steel billets, crop-ends, old rails, scrap iron, and ores are playing a prominent part in this market. A single line landed here in January 458 cars of foreign ore, against 176 cars native ore.

Coke or bituminous:	$	$
Foundry No. 1	21.50@	22.00
Foundry No. 2	21.00@	21.50
Gray F., No. 3	20.50@	21 00
" " No. 4	19.50@	20.00
White	19.00@	20.00
Mottled	19.50@	20.00
Silvery	19.00@	20.00
Bessemer	21.75@	22.00
Charcoal:		
Foundry No. 1	24.00@	25.00
Foundry No. 2	23.00@	24.00
Cold-Blast	27.00@	30.00
Warm-Blast	24.00@	25.00
20 p. c. Spiegel	@	31.00

	$	$
Muck-Bar	35.50@	36.50
Steel Blooms	34.50@	36.00
Steel Slabs	33.00@	35.00
Steel Crop Ends	24.50@	25.00
St'l Bl'm Ends	23.00@	24.50
Old Iron Rails	28.75@	30.00
Old Steel Rails	24.00@	26.00
No. 1 W. Scrap	23.00@	24.00
No. 2 W. Scrap	21.50@	22.00
Steel Rails	39.00@	40.00
" light sect's	40.00@	45.00
Bar Iron	2.00@	
Nails $2.50 net car lots.		
Steel Nails $2.50 net car lots.		

SALES SINCE LAST REPORT.

Tons.		
1500	Bessemer, Coke and Coal Smelted Lake Ore	22.25 cash.
2000	Bessemer, Coke and Coal Smelted Lake Ore	22.00 cash.
1000	No. 1 Mill. Coke and Coal Smelted Lake Ore	21.00 cash.
1000	Gray Forge, City Furnace, Coke and Coal Smelted Lake Ore	20.75 cash.
300	Gray Forge, all ore, Coke and Coal Smelted Lake Ore	22.15 4 mo.
200	Gray Forge, all ore, Coke and Coal Smelted Lake Ore	22.25 4 mo.
100	No. 1 Foundry, all ore, Coke and Coal Smelted Lake Ore	23.00 4 mo.
100	No. 2 Foundry, all ore, Coke and Coal Smelted Lake Ore	22.60 4 mo.
1000	Gray Forge, Coke, Native Ore	21.00 4 mo.
1000	" " " " "	20.00 4 mo.
600	" " " " "	21.25 4 mo.
500	" " " " "	20.50 4 mo.
500	" " " " "	20.50 4 mo.
500	" " " " "	21.00 4 mo.
500	" " " " "	20.50 cash.
400	Gray Forge, Cold Short, Anthracite	19.50 cash.
2000	American, Steel Billets	35.50 cash.
1500	" Nail Slabs, Steel Billets	35.25 cash.
1850	Extra February, Muck-Bars	37.00 cash.
1200	" " " "	37.50 cash.
1000	D. H., Imported Old Iron Rails	29.25 cash.
800	American 5s, Steel-Wire Rods	46.00 cash.
1000	Sheared, Skelp Iron	2 6 per cwt. cash.
850	Grooved, Skelp Iron	2 3 per cwt. cash.

Louisville. Feb. 2.

[Reported by GEORGE H. HULL & Co.]

The market opened strong with large sales at full prices. The demand during the latter part of the week has been less active, and sales smaller. Some furnaces that have been holding out of the market for some time show a little disposition to book orders at inside figures. Other furnaces that have been free sellers have withdrawn from the market, even at outside figures. As a general thing, producers deprecate any further advance, and show a disposition to prevent it by booking orders at medium prices, to the extent of their capacity.

We quote for cash in round lots as below:

PIG-IRON.

Southern Coke, No. 1 Foundry	$22.00@$22.50
" " No. 2 "	21.00@ 21.50
" " No. 2½ "	20 50@ 21.00
Hanging Rock Coke, No. 1 Foundry	22.00@ 22.50
Southern Charcoal, No. 1 Foundry	22.00@ 23.00
Silver Gray, different grades	20.50@ 21.00
Southern Coke, No. 1 Mill, Neutral	20.00@ 20.50
" " No. 2 Mill, Neutral	19 50@ 20.00
" " No. 1, Mill, Cold Short	19.50@ 20.00
" Charcoal, No. 1 Mill	21.00@ 21.50
White and Mottled, different grades	18.00@ 19.00
Southern Car-Wheel, Standard Brands	27.00@ 28.00
" " other "	25.00@ 26.00
Hanging Rock, Cold-Blast	27.00@ 28.00
" " Warm-Blast	23.00@ 24.00

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Feb. 4.

Statistics.

Production Anthracite Coal for week ended January 29th, and year from January 1st:

TONS OF 2240 LBS.	1887. Week.	1887. Year.	1886. Week.	1886. Year.
P. & Read. RR. Co.	145,894	524,612	241,084	697,447
L. V. RR. Co.	116,108	444,980	149,029	483,380
D., L. & W. RR. Co.	97,622	328,608	132,837	477,592
D. & H. Canal Co.	97,468	369,963	99,670	354,057
Penna. RR.	47,158	196,230	79,263	220,722
Penna. Coal Co.	*15,000	64,283	22,991	83,339
Total	519,250	1,928,676	724,874	2,316,537
Increase				
Decrease	205,624	387,861		

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1882	2,100,480	1884	1,884,875
1883	2,106,329	1885	1,568,179

* Estimated.

Production Bituminous Coal for week ended January 29th, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1887. Week.	1887. Year.	1886. Week.	1886. Year.
Phila. & Erie RR.				129
Cumberland, Md.	42,509	184,167	42,939	158,013
Barclay, Pa.	3,357	13,174	3,112	13,181
Broad Top, Pa.				
H. & Broad Top RR.	7,131	33,961	7,100	20,082
East Broad Top				
Clearfield Region, Pa.				
Snow Shoe	4,381	14,412	3,063	11,629
Karthaus (Keating)	6,402	17,589	2,500	8,716
Tyrone & Clearfield	51,845	235,868	72,762	201,285
Alleghany Region, Pa.				
Gallitzin & Mountain	17,727	61,710	18,858	41,049
Pocahontas Flat Top Coal.				
Norf'k & West. RR.	24,178	85,095	17,366	67,626
Kanawha Region, W. Va.				
Ches. & Ohio RR.	30,000	111,105	25,000	83,300
Total	187,220	757,487	192,700	505,010

* Tons of 2240 lbs.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.				
West Penn RR.	8,163	28,475	5,592	19,307
SouthwestPenn.RR.	3,765	13,699	3,257	3,494
Pennsylvania RR.	4,989	12,244	6,040	18,318
Westmoreland Region, Pa.				
Pennsylvania RR.	30,155	123,965	30,930	100,331
Monongahela Region, Pa.				
Pennsylvania RR.	10,947	32,270	4,162	12,693
Total	58,019	217,653	49,981	158,143
Grand total	245,239	975,140	242,681	763,553

Production of Coke on line of Pennsylvania RR. for week ended January 29th, and year from January 1st:

Tons of 2000 pounds.

	1887. Week.	1887. Year.	1886. Week.	1886. Year.
Tyrone & Clearfield	303	923		
Allegheny Region	5,069	18,634	5,512	14,955
West Penn. RR.	2,137	8,448	2,296	7,290
Southwest Penn. RR	67,284	255,022	17,614	139,773
Penn. & W. Region	7,971	31,140	7,851	21,900
Monongahela	4,000	16,266	21	5,132
Pittsburg Region		34		
Snow-Shoe	1,020	4,044	808	2,982
Total	87,784	334,511	34,102	192,032

Anthracite.

So far as the coal trade is concerned, the strikes are decidedly on the wane, and the coal companies are clearly the victors. The daily movement of coal in this harbor is much larger than a week ago, and is steadily increasing.

The companies are having all they can do to meet the demands on old orders, and have at least no spot coal for sale. They all say that they have made no change in prices on account of the strike, and will not. We think that the demand will be so great for coal for some time to come that, when the strike is over, prices are more likely to be higher, than lower, than they are now. We advise our readers to book orders now for the requirements of the next sixty days where coal can be purchased at the prices ruling before the strike began.

Nothing is said about a coal combination for this year. It is thought that the discussion of this subject at the present time would be unpopular with the labor element, and with the legislators of the several States which might enact laws bearing on coal combinations as conspiracies. It is intimated, however, that, by a series of deals going on in the railroad world, there will not probably be much trouble in arranging matters, especially as the coal trade is likely to take pretty good care of itself for some months to come.

Bituminous.

There is nothing to the trade in bituminous coal in this market. None of the companies has any coal to spare, and, as a consequence, there is no opportunity to determine what its present value is. The Berwind-White Coal Mining Company carried out its plans of putting new men at work at South Amboy, and has been able to supply all of the steamers with which it has contracts, as well as the pressing requirements of its other trade. We are informed that the pool is making steady progress toward completion. Cumberland coal is said to have sold f.o.b. Baltimore this week at $2.50 a ton. It is asserted that there are no contracts making for this year's business. The arrivals of vessels at Baltimore this week have been very small. It is thought, however, that there is a very large fleet due there. To Boston, $2.25@$2 has been paid; to New York, $1.85 has been paid, and $1.80@$1.75 is quoted. To Sound ports, $1.85 is asked. Philadelphia freights are about the same as those from Baltimore.

Buffalo. Feb. 3.

[From our Special Correspondent.]

The only feature of interest since last week's budget is the announcement, made a day or two since, that a further reduction in the cost of natural gas for fuel has been ordered by the managers. Henceforth, the price will be 35 cents per 1000 cubic feet, or 25 cents if account is paid within ten days after delivery. It is believed that 25 cents net will be the permanent figure, being based on experiments concerning cost, production, and consumption. No doubt exists but what the gas for fuel purposes is an undoubted success. The question now to be determined is whether 25 cents is equivalent to coal at present prices, taking into consideration the saving of cartage, handling, cleanliness, etc. The company claims that now the fuel gas is much the cheaper article.

The result of interviewing vessel agents here on the subject of the opening rates on coal from Buffalo to Chicago and Milwaukee by lake is, that from 75 cents to 80 cents per net ton will be the figures. It is thought that shippers will not hesitate to make contracts at the price named, as it is deemed by owners of vessels to be a liberal offer. Time will show whether the conclusion arrived at is sound.

The severe weather experienced here this winter makes it evident that the members of the Coal Exchange and the Natural Gas Fuel Company have entered into a combination with the Weather Bureau. In the usual course of events, these parties should be made to suffer for their actions, but the dear public bears the punishment, and the two of the three conspirators reap the reward.

The Merchants' Exchange sent a delegation of four of its members to Albany yesterday, to appear before the Assembly Canal Committee to urge an appropriation of $500,000 for lengthening one tier of eight or more locks on the Erie Canal to 220 feet, and other works of importance.

The receipts of anthracite coal by canal at Oswego, New York, during 1886 were 13,988 net tons; the shipments, 7416 net tons. Only 278 net tons of bituminous were received by canal, and none shipped.

The quantity of coal passing through the Sault Ste. Marie Canal during 1886 was 1,009,999 net tons, as compared with 894,991 net tons in 1885, and 706,379 net tons in 1884.

There is no change to report in the price of anthracite coal. Coke is unchanged. Bituminous coal is a shade higher, but there are so many varieties on the market that quotations are omitted. Probably 25 cents per net ton would be a fair estimate of the increase in prices.

Boston. Feb. 2.

[From our Special Correspondent.]

The troublous times continue at this port, though they doubtless seem tame in comparison with the difficulties at New York. No serious alarm is felt here, but prices have increased materially, and there is much inconvenience to dealers of which the public have thus far got little taste, except as they have paid higher figures for late-bought coal. A little coal is received here from New York, but shippers are unable to load regularly, and can guarantee neither size of coal nor time of shipment as a rule. Complaint is made in some quarters that different sizes are loaded together, but very little comes here in any shape.

The only company able to guarantee shipments of anthracite with any certainty is the Philadelphia & Reading, which is reaping a small harvest. It finds no difficulty in getting $4 f.o.b. at Philadelphia for

Stove, and $3.80 for Broken and Egg, which are full circular prices. Its steamers are also getting $2 and discharge, so that the cost say of Stove, laid down here, is about $6.25. It is said that the Philadelphia & Reading people can ship about 30,000 tons a month, which is only about one sixth of the estimated consumption. However, 30,000 tons can be made to go a good ways.

There is a very good demand for bituminous coal, but scarcely any coal to be had. We hear of $2.40 f.o.b. at Philadelphia, and consider $2.30 rather difficult to get from any port. Every one in the trade is talking higher prices for this year's business, and points to the fact that an advance will be paid the miners in March as an indication of the truth of the assertion. Then, too, the present high freights are cutting terribly into the margins on some of last season's delivered contracts. We hear of losses ranging from 75 cents to $1.25 on recent cargoes chartered at high freights. It makes shippers feel poor, and they are firm above all things in stating that all business will be done f.o.b. after March 1st. The pool percentages are said to be yet undecided, although figures have been published. Nothing has been heard from the Fitchburg's offer for bids.

Freight rates vary quite widely. We hear of $1.50 paid from New York exclusive of discharging, and $2@$2.25 at Philadelphia. We quote, exclusive of discharging: New York, $1.15@$1.30; Philadelphia, $1.90@$2.25; Baltimore, $1.80@$2; Newport News and Norfolk, $1.50@$1.75.

Pocket prices for hard coal have held only a week as last quoted, and are now advanced again. Hard Broken and Egg are marked up to $6, and free-burning, $5.85. Stove of all kinds is advanced to $6.25; Nut, $5.75; and Pea, $4.50. Lykens Valley Stove is now made $7.25: Broken, $6.25: Egg, $7; and Nut, $6.25.

There is a fair retail movement at $6.50 for ordinary Broken, Egg, and Stove, and $8 for Franklin Egg and Furnace.

Pittsburg. Feb. 3.

[From our Special Correspondent.]

The Ohio River remains in good navigable order. The January runs amounted to 6,739,000 bushels, principally for Louisville, whence it will be shipped South. The coal miners' committee and the coal men are holding meetings to decide whether mining will be advanced to 3c. or not. It may be some days before the matter is decided. In the mean time, no coal is mined. Current rates for coal afloat: Second Pool, 4¾@5c.; Third Pool, 3·80@4@5c.; Fourth Pool, 3½@3⅝c.; Railroad, 4½@5c.

Connellsville Coke.—Prices go up, to take place at once, as follows: To furnaces, $2 f.o.b. at ovens; Foundry, $2.25. There is still a scarcity of cars. The supply is not at all regular. Matters will become more settled in a short time.

FINANCIAL.

Mining Stocks.

NEW YORK, Friday Evening, Feb. 4.

There has been but little activity displayed in the mining market during the past week, and there is nothing of special interest to record. Prices show generally a downward tendency, though in a few instances there has been an advance. The total transactions were 114,005 shares, showing a decrease of 8440 shares, as compared with the preceding week.

North Belle Isle shows a higher movement, going from $3.40@$4.40. Navajo ruled at from 85@88c., Belle Isle, from 40@38c.

Sutro Tunnel brought again the largest share of business, transaction of 56,400 shares, at prices ranging from 18@24c.; the latter figure was reached to-day. Consolidated California & Virginia was lower, compared with last week, and declined from $23.50@$22.25. Ophir advanced from $11.75@$14.13, but closed at $13.50. Yellow Jacket, from $4@$4.85. Mexican, from $5.88@$6.50. Best & Belcher was firm at $9.50. Hale & Norcross, at $6.50.

Bodie Consolidated has declined still further, going to $1.75. Bulwer shows only one sale on Saturday, at $1.20. Standard, only one on the same day, at $1.35. Mono opened and closed at $2.50, but sold as low as $2.25. Stanislaus declined from $2.55@$2.10. Plymouth Consolidated was quoted at from $17@$16.50. Quicksilver Preferred, at $29@$29.75. Tayor-Plumas ruled at 11c. and 10c.

The Amador gold mine and the Middle Bar gold mine have been brought out at the Exchange this week, and have been placed on the temporary list for sixty days, in order to give the owners time to produce the information, etc., necessary to be placed on the regular list. Meanwhile, transactions can go on in the regular order.

The Amador gold mine has a capital stock of $400,000, par value of shares $2 each. It was listed at $1, and prices during the week here advanced to $1.25. The Middle Bar gold mine has also a capital stock of $400,000, par value of shares $2 each, and was listed at 50c., advancing to 57c. Both properties are located at Jackson, Amador County, California.

New Germany, which appeared last week at 46c., ranged this week from 48@42c., with sales of 7000 shares.

Some attention was again directed to Colorado stocks. Lacrosse showed the largest sales, at prices ranging from 13@15c. Little Chief advanced from 25@28c. Leadville stood at 70c. Bassick sold at 17 and 19c. Silver Cliff, at 18 and 19c. Red Elephant, at 5 and 6c.

A sale of 20 shares is recorded of Ontario at $24. Horn Silver advanced from $1.45@$1.55. Stormont was active, with sales of 4100 shares at 9 and 10c.

Castle Creek showed some activity at from 11@13c., closing price.

Rappahannock, which has always been a favorite speculative stock, has taken a downward course, going from 18@15c.

Deadwood-Terra and Homestake were quiet, the former showing but one sale at $2.25, and the latter a few at from $13@$15. Caledonia remained at $1.25.

El Cristo, in the beginning of the week, continued the downward course of last week, and went as low as $2.30; toward the close, it rallied, and went again to $2.45, with sales of 6030 shares. The trumpets are hushed for the present, but there is no doubt that very soon the sweetest tones will again be heard from this quarter.

Phœnix is on the downward move, and the last sales recorded were made between $7 and $8.

Coal Stocks.

The market has been under the influence of strikes, war scares, and the uncertainty as to what the President will do in reference to the Interstate Commerce Bill. The great depressing influence has been the fear of war in Europe, and the panicky condition of the London and continental bourses. To-day, the foreign advices were more favorable, and the market rallied all around. There is, nevertheless, a feeling of much uncertainty, especially over European matters, and the belief is, that there is no certainty that the demoralization of the past week will not be repeated during the coming week, and probably with even greater force.

In the fluctuations of the week under review, the coal stocks have acted in sympathy with the rest of the market, and are not subjects for special comment. The following official statement gives a summary of the profit and loss account of the Delaware & Hudson Canal Company for the year 1886:

Receipts from coal	$7,081,842.12
Railroads	8,239,746.66
Miscellaneous and interest	692,277.34
Total	$16,013,866.12
Less expenses of all kinds	11,422,854.34
Gross profits	$4,591,011.78
Deduct taxes, interest, and rentals	3,415,526.25
Net earnings 1886	$1,175,485.53

The following stocks were sold at auction in this city on the 2d inst.: 100 shares Pennsylvania Coal Company, 272⅝@273; 100 shares Consolidation Coal Company, 23½; $100 Central Railroad of New Jersey 7 per cent adjustment bond, due 1903, 104; $1000 Delaware & Hudson Canal Company 7 per cent bond, due 1894, 118; $10,000 Altamont Coal Company, of Kentucky, 6 per cent first mortgage bonds, January, 1887, coupons paid, 1500; 2500 Lehigh & Wilkes-Barre Coal Company income bonds, 90½.

The receivers of the Philadelphia & Reading Railroad Company will purchase, on and after February 10th, at the rate of five per cent per annum, the interest and coupons due February 1st, 1887, of the divisional coal land mortgage bonds, known as the McNeal Tract of the Philadelphia & Reading Coal and Iron Company, guaranteed by the Philadelphia & Reading Railroad Company.

The statement of the Norfolk & Western Railroad Company for the year 1886 shows: Gross earnings, $3,252,056.59; expenses, including taxes, $1,960,-909.36; net earnings, $1,291,147.23; showing an increase of $169,318.04, as compared with the year 1885.

Meetings.

The annual and special meetings of the following companies will be held at the times mentioned:

Chester Pipe and Tube Company, South Chester, Pa., February 9th, at half-past twelve o'clock P.M.

Connellsville Gas Coal Company, No. 333 Walnut street, Philadelphia, Pa., February 21st, at twelve o'clock M.

Highland Coal Company, No. 320 Walnut street, Philadelphia, Pa., February 9th, at twelve o'clock M.

North Branch Steel Company, No. 330 Walnut street, Philadelphia, Pa., March 19th, at eleven o'clock A.M., special meeting for the purpose of voting for or against an increase of its mortgage indebtedness from $45,000 to $200,000.

Peninsula Copper Mining Company, Room 3, No. 78 Monroe street, Chicago, Ill., February 21st, at ten o'clock A.M.

Red Mountain Mining Company, No. 60 Broadway, New York City, February 10th, at twelve o'clock M.

Southwark Foundry and Machine Company, No. 430 Washington avenue, Philadelphia, Pa., March 31st, at four o'clock P.M., for the purpose of voting for or against the issue of two hundred thousand dollars of preferred stock of the company, and for the purpose of holding an election for or against the decrease of the capital stock of the company to two hundred thousand dollars.

Standard Consolidated Mining Company, No. 310 Pine street, San Francisco, Cal., February 21st.

Dividends.

Granite Mountain Mining Company, of Montana, has declared dividend No. 26, of twenty-five cents a share, or $100,000, payable to stockholders January 27th, and to others February 2d.

Mary Murphy Mining Company, of Colorado, has declared dividend No. 2, of $5 a share, payable February 8th.

ASSESSMENTS.

COMPANY.	No.	When levied.	Delinquent in office.	Day of sale.	Amount.
Alpha, Nev	29	Jan. 12	Feb. 17	Mar. 10	.50
Andes, Nev	31	Jan. 24	Mar. 3	Mar. 23	.25
Benton Cons., Nev	17	Jan. 28	Mar. 4	Mar. 24	.25
Bodie, Cal	6	Jan. 24	Feb. 28	Mar. 28	.50
Bullion, Nev	32	Jan. 22	Mar. 1	Mar. 17	.40
Bunker Hill Cons., Cal	17	Nov. 30	Jan. 10	Feb. 15	.70
Camp Creek Placer, Cal	1	Jan. 20	Mar. 10	Apl. 14	.10
Columbus Cons., Nev.	5	Dec. 22	Jan. 27	Feb. 18	.50
Golconda, Cal	2	Dec. 22	Jan. 27	Feb. 16	.03
Hotspur, Dak	2	Nov. 22	Jan. 24	Feb. 11	½
Hubert Concentrator, Cal	1	Jan. 17	Feb. 20	Mar. 14	.10
Keokuk, Dak	3	Dec. 20	*Mar. 1	*Apl. 1	¼
Kincaid Flat, Cal		Jan. 5	Feb. 14	Mar. 7	2.00
Lady Washington, Nev	6	Jan. 28	Mar. 7	Mar. 28	.25
Manhattan, Nev		Feb. 2			1.00
Maryland & Charlotte		Nov. 29	Feb. 1	Feb. 1	.05
May Flower, Cal	34	Jan. 19	Feb. 28	Mar. 18	.25
Mexican, Nev	33	Jan. 4	Feb. 9	Mar. 2	.25
Mides, Nev	3	Dec. 16	Jan. 22	Feb. 10	.25
Navajo, Nev	16	Jan. 7	Feb. 10	Mar. 3	.25
Nevada Queen, Nev	1	Jan. 4	Feb. 8	Mar. 3	.30
North Belle Isle, Nev	11	Jan. 12	Feb. 15	Mar. 9	.50
North Comstock, Nev		Jan. 14			.10
Occidental, Nev		Feb. 3			.40
Ophir, Nev	52	Dec. 15	Jan. 18	Feb. 7	.50
Orleans Cons., Nev	1	Dec. 6	Jan. 12	Feb. 2	.05
Pneumatic, Cal	2	Jan. 4	Feb. 14	Mar. 8	.20
Sampson, Utah		Dec. 17	Jan. 31	Feb. 28	.25
Sierra Nevada, Nev	87	Jan. 4	Feb. 9	Mar. 1	.25
Silver Eagle, Nev	1	Jan. 18	Feb. 18	Mar. 21	.05
South Fork, Cal	43	Dec. 15	Jan. 15	Feb. 15	1.00
Utah, Nev		Jan. 25			.50
West Galena, Dak	5	June 5	*Jan 29	*Feb 19	½

*The delinquent day and the day of sale were postponed to dates given above.

St. Louis Mining Stocks. Feb. 2.

[From our Special Correspondent.]

The market for the past week has been dull, with a marked decline in Adams, which has been offered down from day to day, closing with offers to sell at $2.25 a share. Peacock, which was raided the last half of the past week, regained strength, and closes strong at $2 a share. Granite and Hope are in good demand at about the same figures as last week. The "fancies" are still demoralized, Sheridan selling at 15c. a share, with indications of its going still lower.

Telegraphic advices on the 4th state that several hundred victims of speculation in the Sheridan mine held an indignation meeting in the Mercantile Club, on

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par value	Assessments. Total levied to date.	Assessments. Date and amount per share of last.	Dividends. Total paid to date.	Dividends. Date and amount per share of last.
1	Adams, s L..	Colo.	$1,500,000	150,000	$10	*	.....	....
2	Alice, s.C..	Mont	10,000,000	400,000	25	*	.....	....
3	Amie Con., s. L.	Colo.	5,000,000	500,000	10	*	.....	....
4	Amy & Silveramith, s.	Mon.	.....	$11,419	.....	.....	.....	....
5	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl. 1875	$1.00
6	Argenta, s	Nev..	10,000,000	100,000	100	295,000	July 1885	.10
7	Barbee & Walker, s..	Utah	1,000,000	100,000	10	*	.....	.....
8	Bassick, G. S.	Colo.	10,000,000	100,000	100	*	.....	.....
9	Belle Isle, s.	Nev..	10,000,000	100,000	100	140,000	May 1886	.10
10	Belcher, G. S.	Nev..	10,400,000	104,000	100	2,217,335	ec. 1885	.30
11	Bellevue Idaho, s. L.	Idah.	1,250,000	125,000	10	26,250	Dec. 1883	10
12	Big B'nd Hydraulic, G	Dak..	1,000,000	200,000	5	*	.....	.....
13	Black Bear, G.	Cal..	3,000,000	30,000	100	22,500	Dec. 1884	.25
14	Bodie Con., G. S.	Cal..	10,000,000	100,000	100	374,990	Jan. 1887	.50
15	Bonanza Developm't	C&M	3,000,000	300,000	10	.....	.....	....
16	Bonanza K'g, Cons.s.	Cal..	1,000,000	100,000	10	*	.....	.....
17	Boston & Mont, G.	Mont	2,500,000	250,000	10	*	.....	.....
18	Breece, s.	Colo.	5,000,000	200,000	25	*	.....	.....
19	Brooklyn Lead, L. S	Utah	500,000	50,000	10	.....	.....	.....
20	Bulwer, G.	Cal	1,000,000	100,000	100	40,000	Oct. 1885	.20
21	Caledonia, G.	Dak	10,000,000	100,000	100	505,000	May 1885	.15
22	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000	.....	.....
23	Carbonate Hill, s. L..	Colo.	2,000,000	200,000	10	*	.....	.....
24	Caribou Con., s.	Colo.	1,500,000	150,000	10	*	.....	.....
25	Castle Creek, G.	Idah.	100,000	100,000	1	.....	.....	.....
26	Catalpa, s. L.	Colo.	3,000,000	300,000	10	*	.....	.....
27	Central, C.	Mich	500,000	20,000	25	100,000	Sept 1861	.06
28	Christy, s.	Utah	10,000,000	100,000	100	.....	.....	.....
29	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*	.....	.....
30	Colorado Central, s. L	Colo.	2,750,000	275,000	10	*	.....	.....
31	Cons. Cal. & Va., G. S.	Nev..	21,600,000	216,000	100	108,000	Jan. 1885	.20
32	Con. Gold Mining, G.	Ga...	500,000	100,000	5	*	.....	.....
33	Contention, $	Ariz.	12,500,000	250,000	50	.....	.....	.....
34	Crescent, s. L. G.	Utah	15,000,000	600,000	25	‡	.....	.....
35	Crown Point, G. S.	Nev..	40,000,000	100,000	100	2,675,000	Feb. 1882	.25
36	Deadwood-Terra, G.	Dak..	5,000,000	200,000	25	*	.....	.....
37	Derbec B. Grav., G. S.	Cal..	10,000,000	10,000	100	90,000	Dec. 1881	.10
38	Dunkin, s. L.	Colo.	5,000,000	200,000	25	*	.....	.....
39	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,000	July 1883	.50
40	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	500,000	July 1886	1.00
41	Evening Star, s. L.	Colo.	500,000	30,000	10	*	.....	.....
42	Excelsior, G.	Cal..	10,000,000	100,000	100	560,000	Sept 1885	1.00
43	Father de Smet, G.	Dak..	10,000,000	100 000	100	200,000	Nov. 1878	1.00
44	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun. 1871	.....
45	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*	.....	.....
46	Fresno Enterprise, G	Cal..	5,000,000	100,000	50	.....	Mch 1883	.10
47	Garfield Lt., G. S	Nev.	500,000	100,000	5	.....	.....	.....
48	Gould & Curry, G. S.	Nev..	10,800,000	108,000	100	4,055,000	Sept 1886	.50
49	Grand Central, s.	Ariz.	1,000,000	100,000	10	.....	.....	.....
50	Grand Prize, s.	Nev..	10,000,000	100,000	100	570, 00	Apl. 1886	.50
51	Granite, s.	Colo.	125,000	125,000	1	.....	.....	.....
52	Granite Mountain, s.	Mont	10,000,000	400,000	25	.....	.....	.....
53	Green Mountain, G.	Cal..	1,250,000	125,000	10	*	.....	.....
54	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	4,971,800	Oct. 1886	.40
55	Hall-Anderson, G.	N. S..	150,000	150,000	1	.....	.....	.....
56	Hecla Con., s. G. L. C.	Mont	1,500,000	30,000	50	*	.....	.....
57	Hel'a Mg & Red, G. S. L	Mont	3,315,000	663,000	5	.....	.....	.....
58	Holmes, s	Nev..	10,000,000	100,000	100	300,000	Sept 1885	10
59	Holyoke, G.	Idah	200,000	200,000	1	.....	.....	.....
60	Homestake, G.	Dak.'	12,500,000	125,000	100	200,000	July 1878	1.00
61	Honorine, s. L.	Utah	500,000	250,000	2	25,000	Jun. 1883	.....
62	Hope, s.	Mont	400,000	8,000	50	*	.....	.....
63	Horn-Silver, s. L.	Utah	10,000,000	400,000	25	*	.....	.....
64	Idaho, G.	Cal..	310,000	3,100	100	.....	.....	.....
65	Ideal, s. L	Colo.	1,500,000	150,000	10	*	.....	.....
66	Illinois, s	N.M.	100,000	100,000	1	*	.....	.....
67	Independence, s.	Nev..	10,000,000	100,000	100	340,000	Oct. 1886	.20
68	Indian Queen, s.	Nev..	250,000	125,000	2	.....	.....	.....
69	Inyo, G	Cal..	500,000	100,000	5	*	.....	.....
70	Iron Hill, s.	Dak.	2,500,000	250,000	10	82,500	Oct. 1885	.....
71	Iron-Silver, s. L	Colo.	10,000,000	500,000	50	*	.....	.....
72	Jackson, G. S.	Nev.	5,000,000	50,000	100	10,000	Nov. 1880	.20
73	Jocuistita, s	Mex.	2,500,000	250,000	10	.....	.....	.....
74	Kentuck	Nev..	3,000,000	30,000	100	342,000	Nov 1881	.30
75	La Plata, s. L.	Colo	2,000,000	200,000	10	*	.....	.....
76	Leadville Cons., s. L.	Colo.	4,000,000	400,000	10	*	.....	.....
77	Lexington, G. S.	Mont	4,000,000	40,000	100	*	.....	.....
78	Little Chief, s. L	Colo.	10,000,000	200,000	50	*	.....	.....
79	Little Pittsburg, s. L	Colo.	20,000,000	200,000	100	*	.....	.....
80	Manhattan, s.	Nev.	5,000,000	50,000	100	150,000	July 1879	1.00
81	Marguerite, G.	Cal..	500,000	25,000	20	.....	.....	.....
82	Marion Bullion, G	N C	500,000	.....	.....	.....	.....	.....
83	Martin White, s.	Nev..	10,000,000	100,000	100	1,150,000	Mar. 1886	25
84	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl. 1886	1 00
85	Mono, G	Colo.	5,000,000	5,000	100	560,000	Jun. 1885	.50
86	Montana, Lt., G. S.	Mont	3,300,000	330,000	10	*	.....	.....
87	Morning Star, s. L.	Colo.	1,000,000	100,000	10	*	.....	.....
88	Moulton, s. G.	Mont	2,000,000	400,000	5	*	.....	.....
89	Mount Pleasant, G.	Cal.	150,000	150,000	1	*	.....	.....
90	Mt. Diablo, s	Nev..	5,000,000	50,000	100	137,500	Jun. 1880	2.00
91	Napa, G	Cal..	700,000	100,000	7	.....	.....	.....
92	Navajo, G. S	Nev..	10,000,000	100,000	100	420,000	Jan. 1887	25
93	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*	.....	.....
94	New York Hill, G	Cal..	5,000,000	50,000	100	62,500	Oct 1885	.15
95	Northern Belle, s	Nev..	5,000,000	50,000	100	425,000	Jan. 1884	8.30
96	North Belle Isle, s.	Nev..	10,000,000	100,000	100	200,000	Jan. 1887	.50
97	Ontario, s. L.	Utah	15,000,000	150,000	100	.....	.....	.....
98	Ophir, G. S	Nev..	10,000,000	100,000	100	4,007,800	Dec. 1886	.50
99	Original, s. C.	Mont	1,500,000	60,000	25	*	.....	.....
100	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl. 1876	1.60
101	Oxford, G.	N. S.	125,000	125,000	1	*	.....	.....
102	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	47,000	Mar. 1882	.15
103	Peacock, s. G. C.	N.M.	2,000,000	200,000	10	*	.....	.....
104	Pleasant Valley, G. S.	Cal.	10,000,000	100,000	100	40,000	Mar. 1884	.10
105	Plumas, G. S. C. L.	Colo.	2,000,000	200,000	10	*	.....	.....
106	Plymouth Con., G.	Cal..	5,000,000	100,000	50	*	.....	.....
107	Prussian, s. L.	Colo	1,500,000	150,000	10	.....	.....	.....
108	Quicksilver, pref., G.	Cal..	4,300,000	43,000	100	.....	.....	.....
109	" com., G	al	5,700,000	57,000	100	.....	.....	.....
110	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec. 1862	.....
111	Richmond, s. L.	Nev..	1,350,000	54,000	25	*	.....	.....
112	Ridge, C.	Mich.	500,000	20,000	25	220,000	Mar 1886	.50
113	Rising Sun, s.	Dak.	750,000	150,000	5	*	.....	.....
114	Robinson Con., s. L	Colo.	10,000,000	200,000	50	*	.....	.....
115	Robert E. Lee, s. L.	Colo	10,000,000	200,000	20	.....	.....	.....
116	Rocks, G.	Vt...	500,000	50,000	10	*	.....	.....
117	San Francisco, C.	Cal..	5,000,000	50,000	100	45,000	Sept 1885	.50
118	Savage, s.	Nev..	11,250,000	112,000	100	6,153,000	Jun. 1886	.50
119	Security L. Mg, Mfg.	Colo.	1,000,000	100,000	10	*	.....	.....
120	Shoshone, G.	Idah.	150,000	150,000	1	.....	.....	.....
121	Sierra Nattes, G	Cal..	225,000	22,500	10	.....	.....	.....
122	Sierra Grande, s.	N. M.	2,500,000	500,000	5	.....	.....	.....
123	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	5,997,698	Jan. 1887	.25
124	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10	.....	.....	.....
125	Silver King, s.	Ariz.	10,000,000	100,000	100	.....	.....	.....
126	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*	.....	.....
127	Small Hopes Cons., s.	Colo.	5,000,000	250,000	20	*	.....	.....
128	Smuggler, S. L.	Colo.	600,000	60,000	10	.....	.....	.....
129	Socorro, C.	N. M.	250,000	5,000	100	*	.....	.....
130	South Yuba, G.	Cal..	2,000,000	40,000	50	*	.....	.....
131	Spring Valley, G.	Cal..	2,000,000	2,000	1	50,000	Oct. 1886	.25
132	Standard, G. S.	Cal..	10,000,000	10,000	100	25,000	Oct. 1884	.25
133	Stormont, s.	Utah	500,000	100,000	1	*	.....	.....
134	St. Joseph, L.	Mo..	1,500,000	150,000	10	*	.....	.....
135	Syndicate, G.	Cal..	10,000,000	100,000	100	38,729	July 1882	.15
136	Tip Top, s.	Ariz	10,000,000	100,000	100	250,000	Sept 1883	.25
137	Tombstone, G. S. L.	Ariz	12,500,000	500,000	25	*	.....	.....
138	True Fissure, G. S. L.	Utah	1,000,000	150,000	10	*	.....	.....
139	United Verde, C.	Ariz.	3,000,000	300,000	10	*	.....	.....
140	Valencia, M	N. M.	150,000	1,500	100	*	.....	.....
141	Vista Lt., s. L.	Idah.	750,000	150,000	5	*	.....	.....
142	Vizina, s	Ariz	5,000,000	200,000	25	*	.....	.....
143	Yankee Girl	Colo	2,500,000	250,000	10	*	.....	.....
144	Yellow Jacket, G. S.	Nev.	12,900,000	129,000	100	5,448,000	Dec. 1885	.75
145	.....	.....	.....	.....	.....	.....	.....	.....
146	.....	.....	.....	.....	.....	.....	.....	.....
147	.....	.....	.....	.....	.....	.....	.....	.....

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par Value	Assessments. Total levied to date.	Assessments. Date and amount per share of last
1	Agassiz Cons., s. L.	Colo.	$2,500,000	50,000	$50	* ....
2	Albion, s. L.	Nev..	15,000,000	150,000	100	$577,000 July 1883 .50
3	Allouez, C.	Mich	2,000,000	80,000	25	240,000 Feb. 1884 .50
4	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	445,000 Jan. 1887 .50
5	Alta, s.	Nev..	10,080,000	100,800	100	1,976,600 Oct. 1886 .25
6	Amador, G.	Cal..	400,000	200,000	2	* ....
7	American Flag, s.	Colo.	1,250,000	125,000	10	300,000 Jun. 1877 .25
8	Anglo-Montana, Lt.	Mon.	600,000	120,000	5	....
9	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5	....
10	Aspen Mg. & S., s. L	Colo.	2,000,000	200,000	10	....
11	Barcelona, G.	Nev..	5,000,000	200,000	25	* ....
12	Battle Creek, G.	Dak.	5,000,000	200,000	25	....
13	Bear Creek	Cal..	300,000	300,000	1	....
14	Bechtel Con., G.	Cal..	10,000,000	100,000	100	173,500 Jan. 1889 .10
15	Belmont, s.	Nev..	5,000,000	50,000	100	735,000 Apl. 1886 .10
16	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	1,748,590 Sept 1886 .50
17	Big Pittsburg, s. L.	Colo.	20,000,000	200,000	100	* ....
18	Bi-Metallic, s.	Mon.	5,000,000	200,000	25	* ....
19	Black Jack, G.	Cal..	250,000	100,000	2½	....
20	Bonanza Chief	Mon	1,000,000	1,000,000	1	* ....
21	Bondholder	Colo	500,000	200,000	2½	....
22	Boston Con., G	Cal..	10,000,000	100,000	100	170,000 Nov 1883 .25
23	Bradshaw, s.	Ariz.	2,250,000	225,000	10	....
24	Brunswick, G.	Cal..	2,000,000	400,000	5	* ....
25	Buckeye Common	Colo.	2,000,000	400,000	5	* ....
26	Bull-Domingo, s. L.	Colo.	10,000,000	200,000	50	* ....
27	Bullion, G. S.	Nev..	10,000,000	100,000	100	5,000,000 Jan. 1887 .40
28	Bve and Bye	Ariz.	1,000,000	100,000	10	* ....
29	Calaveras, G.	Cal..	500,000	500,000	1	* ....
30	Carisa, G.	Wy .	500,000	100,000	5	* ....
31	Catskill, s.	Nev..	1,500,000	300,000	5	....
32	Cen Contin'l, G. S. L.	C.&A	2,000,000	200,000	10	* ....
33	Charles Dickens.	Idah.	1,250,000	250,000	5	....
34	Cherokee, G.	Cal..	1,500,000	150,000	10	....
35	Chollar, s.	Nev..	11,200,000	112,000	100	1,096,000 Nov 1886 .50
36	Cinnamon Mt., G. S.	Colo.	750,000	150,000	5	....
37	Climax, s. L	Colo.	2,000,000	200,000	10	* ....
38	Colorado No. 2, s. L	Colo.	100,000	10,000	10	....
39	Con. Imperial, G. S.	Nev..	50,000,000	500,000	100	1,100,000 Aug. 1886 .10
40	Con. Pacific, G.	Cal..	6,000,000	60,000	100	174,000 Feb. 1886 .15
41	Cons Silver, s	Mo..	2,500,000	250,000	10	....
42	**Con. Queen Cons, C.	Ariz	1,400 000	140,000	10	....
43	Courtlandt	Colo.	500,000	50,000	10	....
44	Crescent, s. L.	Colo.	3,000,000	300,000	10	* ....
45	Crocker, s.	Ariz.	10,000,000	100,000	100	65,000 May 1886 .20
46	Crowell, G.	N. C.	500,000	500,000	1	....
47	Dahlonega, G.	Ga..	250,000	250,000	1	* ....
48	Dandy, s.	Colo.	5,000,000	500,000	10	....
49	Dardanelles, G.	Cal..	1,000,000	100,000	10	....
50	Decatur, s.	Colo.	1,500,000	300,000	5	* ....
51	Denver City, s. L.	Colo.	5,000,000	500,000	10	* ....
52	Denver Gold	Colo.	300,000	60,000	5	....
53	Deseret, G. S.	Utah	500,000	50,000	10	* ....
54	Dunderberg, s.	Colo.	1,500,000	150,000	10	* ....
55	Durango, G.	Colo.	500,000	500,000	1	* ....
56	Durango T.	Mex	120,000	1,200	100	....
57	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000 Mar. 1886 1.60
58	El Cristo, G. S.	U.S.C	1,000,000	500,000	2	....
59	Empire Lt., G. S.	Mon.	500,000	150,000	5	....
60	Empire, s.	Utah	10,000,000	100,000	100	* ....
61	Enterprise., s. L.	Colo.	800,000	80,000	10	* ....
62	Eureka Tunnel, s. L.	Nev..	10,000,000	100,000	100	* ....
63	Exchequer	Nev..	10,000,000	100,000	100	860,000 Oct. 1886 .20
64	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314 Dec. 1885 .25
65	Goodshaw, G.	Cal..	10,000,000	100,000	100	* ....
66	Grand Belt, C	Tex.	12,000,000	120,000	100	....
67	Grand Duke	C lo.	800,000	80,000	10	....
68	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	* ....
69	Gregory Con., G	Mon.	3,000,000	300,000	10	....
70	Hariem M. & M. Co, G.	Cal..	1,000,000	200,000	5	....
71	Head Cent. & Tr. s. G	Ariz.	10,000,000	100,000	100	....
72	Hidalgo, s.	Mex.	200,000	20,000	10	....
73	Highland, C	Mich	500,000	25,000	25	....
74	Hortense, s.	Colo.	2,000,000	200,000	10	....
75	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	....
76	Iroquois, C	Mich	1,250,000	50,000	25	....
77	J. D. Reymert	Ariz	10,000,000	100,000	100	* ....
78	Julia Cons., G. S.	Nev..	11,000,000	110,000	100	1,438,000 Nov 1885 .10
79	Kearsarge, C.	Mich	1 250,000	50,000	25	100,000 Apl. 1886 5.00
80	Ladede	N. M.	2,000,000	200,000	10	....
81	Lacrosse, G.	Colo.	1,000,000	100,000	10	* ....
82	Lee Basin, s. L.	Colo.	5,000,000	500,000	10	* ....
83	Leviathan, s.	Nev..	10,000,000	100,000	100	380,000 Sept 1882 .25
84	Lucerne, s.	Colo.	5,000,000	500,000	10	* Jan. 1886 .10
85	Mammoth Bar., G.	Cal..	10,000,000	100,000	100	50,000 Dec. 1881 .....
86	Mariposa pref., G.	Cal..	5,000,000	50,000	100	1,687,500 Feb 1883 .25
87	" common, G.	Cal..	10,000,000	100,000	100	1,975, 00 Dec. 1881 .20
88	May Belle, G.	Cal..	10,000,000	100,000	100	84,000 Mar. 1884 .15
89	Mayflower Gravel,	Cal..	1,000,000	10,000	100	135,000 Jan. 1887 .25
90	Mexican, G. S	Nev..	10,000,000	100,800	100	2,590,960 Jan. 1887 .25
91	Middle Bar, G	Cal..	400,000	200,000	2	* ....
92	Mike & Starr, s. L.	Colo.	1,000,000	200,000	5	* ....
93	Miner Boy, G. S. L.	Colo.	5,000,000	500,000	10	* ....
94	Miller	Nev	5,000,000	200,000	25	....
95	Moose Silver, s.	Colo.	3,000,000	300,000	10	* ....
96	Nachoochee, Lt., G.	Ga.	1,000,000	20,000	5	....
97	New Germany, G	N S.	100,000	100,000	1	* ....
98	New Pittsburg, s. L	Colo	2,000,000	200,000	10	* ....
99	North Standard, G.	Cal..	10,000,000	100,000	100	20,000 Nov .....
100	Noonday	Cal..	600,000	60,000	10	208,000 Dec 1881 .10
101	Old Dominion, C.	Ariz.	3,000,000	300,000	10	....
102	Oriental	Nev	2,000,000	200,000	10	....
103	Oriental & Miller, s.	Nev..	10,000,000	400,000	25	....
104	Overman, G. S.	Nev..	11,520,000	115,200	100	3,736,880 Jan. 18 7 .30
105	Parrott, C.	Mon.	1,800,000	180,000	10	....
106	Park, s.	Utah	2,000,000	200,000	10	....
107	Peer, s.	Ariz	10,000,000	100,000	100	135,000 Nov 1886 .10
108	Peerless, s.	Ariz	10,000,000	100,000	100	295,000 Nov. 1886 .30
109	Phoenix	Ariz.	500,000	500,000	1	....
110	Potosi,	Nev..	11,200,000	112,000	100	1,112,000 Nov 1886 .30
111	Puritan, s. G.	Colo	1,500,000	150,000	10	* ....
112	Quin y	Colo	5,000,000	500,000	10	....
113	Rappahannock, G. S	Va ..	2,500,000	250,000	1	* ....
114	Red Elephant, s.	Colo	500,000	500,000	1	* ....
115	Robins, G. S.	Colo	5,000,000	200,000	25	* ....
116	Ropes, G. S.	Mica	2,000,000	80,000	25	64,200 Mar 1886 .10
117	S P. & Canon del A. C.	N.M.	1,000,000	400,000	25	* ....
118	Sheridan	N.M.	2,000,000	200,000	10	....
119	Silver Cliff, s.	Colo.	5,000,000	400,000	12 ½	....
120	Sonora Con	Mex	5,000,000	200,000	25	* ....
121	South Bulwer, G	Cal..	10,000,000	100,000	100	100,000 May 1881 .25
122	South Dite	Cal..	10,000,000	100,000	100	185,000 Jan. 1886 .05
123	South Pacific	Cal.	500,000	100,000	5	....
124	Stanislaus, G	Cal..	2,000,000	200,000	10	....
125	Slave Lake, s.	Nev..	250,000	250,000	1	....
126	St. Louis & Mex., s.	Mex	5,000,000	500,000	10	* ....
127	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10	....
128	St. L. & St. Felipe, G. s.	Mex.	1,500,000	150,000	10	....
129	St. L. & Sonora, G. s.	Mex.	1,500,000	150,000	10	....
130	St. Louis & Yavapai	Ariz	3,000,000	300,000	10	....
131	Sunday Lake,	Mich	1,250,000	50,000	25	....
132	Sullivan, G. S. L.	Mie...	500,000	100,000	5	125,00 Dec. 1882 .25
133	Sutro Tunnel	Nev..	20,000,000	2,000,000	10	....
134	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000 Apl. 1885 3.00
135	Taylor-Plumas, G.	Cal..	1,000,000	200,000	5	* ....
136	Tioga Cons., G.	Cal..	1,000,000	100,000	10	* ....
137	Todos Santos, s.	Mex	1,000,000	100,000	100	325,000 Oct. 1882 .10
138	Tuscarora, s.	Nev.	10,000,000	100,000	100	110,00 Oct. 1881 .15
139	Unadilla, s.	Colo.	50,000,000	500,000	100	* ....
140	Union Con., G. S.	Nev.	10,000,000	100,000	100	2,110,000 Nov. 1886 .25
141	United M. Lundy, G.	Cal.	1,000,000	200,000	5	....
142	Utah, s.	Nev..	10,000,000	10,000	100	1,840,000 Jan. 1887 .50
143	Vandewater	Nev..	20,000,000	200,000	100	* ....
144	Washington	Ariz.	2,000,000	200,000	10	....
145	Wellington, G	Nev..	100,000	50,000	2	* ....
146	West Granite Mt., s.	Mon.	5,000,000	500,000	10	* ....
147	Whalen Copper	Nev..	2,500,000	100,000	25	....

G. Gold. S. Silver. L. Lead C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1881, the California had paid $31,320,000 in dividends, and the Con. Virginia $42,390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350 000 in dividends.

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 29.		Jan. 31.		Feb. 1.		Feb. 2.		Feb. 3.		Feb. 4.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon													
Argenta, Nev													
Bassick, Colo					.40		.17		.19		.40	.38	300
Belle Isle, Nev													1,000
Bodie Cons., Cal							2.00	1.75					325
Breece													
Bulwer, Cal	1.20												200
Caledonia, Dak	1.25		1.25										300
Chollar													
Chrysolite, Colo													
Colorado Cent'l, Colo													
Cons. Cal. & Va., Nev	23.50						22.25				22.25		220
Crown Point, Nev													
Deadwood, Dak									2.25				100
Dunkin													
Eureka Cons., Nev													
Father de Smet, Dak											.85		100
Freeland, Colo													
Gold Stripe, Cal													
Gould & Curry, Nev			4.75		4.80								110
Green Mountain, Cal													
Hale & Norcross, Nev							6.50						150
Homestake, Dak							13.00		15.00				250
Horn-Silver, Ut	1.45		1.55	1.50							1.50		500
Independence, Nev													
Iron Hill, Dak													
Iron Silver, Colo													
Leadville C., Colo					.70								100
Little Chief, Colo	.26	.25	.26		.26		.27				.28	.26	2,600
Little Pittsburg, Colo													
Moulton													
Navajo, Nev					.85		.88						600
North Belle Isle, Nev	3.40		4.00				4.05	3.95	4.30		4.40		900
Ontario, Ut	24.00												20
Ophir, Nev							11.75		14.13		13.50		300
Plymouth, Cal							17.00	16.50					150
Quicksilver Pref., Cal					29.00						29.75		200
" Com., Cal													
Robinson Cons., Colo													
Savage, Nev													
Scorpion, Nev					1.20								200
Sierra Nevada, Nev													
Silver King, Ariz											7.38		100
Standard, Cal	1.35												100
Stormont, Ut	.10				.10	.09			.10				4,100
Yellow Jacket, Nev					4.00				4.85				150

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 29.		Jan. 31.		Feb. 1.		Feb. 2.		Feb. 3.		Feb. 4.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Amador			1.00		1.05	1.00	1.10	1.05	1.15		1.25	1.20	2,400
Am. Flag, Colo													
Barcelona, Nev											.18		
Bechtel Con., Nev												.20	.19	1,200
Belcher, Nev													
Best & B'lcher, Nev			9.50								9.50		60
Big Pittsb'g, Colo													
Bullion, Nev													
Bull-Dom'go, Colo													
Castle Creek, Id							.12	.11	.12			.13		3,100
Central Ariz., Ariz													
Columbia & Beaver													
Cons. Imperial, Nev													
Con. Pacific, Cal	.35												100
Durango													
Decatur, Colo													
El Cristo, U. S. Col	2.50	2.30	2.50	2.40	2.50	2.35	2.45		2.40	2.35	2.45		6,030
Gold Placer													
Goodshaw, Cal													
Harlem, Colo													
Helena, Mont													
Julia	1.15				1.15		1.25						400
Justice													
Kossuth, Nev									.10				300
Lacrosse, Colo			.13		.14		.15	.14					5,000
Mexican, Nev							5.88		6.50	6.25			300
Middle Bar							.52	.50	.54	.52	.57	.55	3,700
Mono, Cal	2.50		2.30	2.25			2.50						800
New Germany	.48	.46	.46	.45	.46	.45	.45	.44	.44	.43	.46	.42	7,000
New Pittsb'g, Colo													
North Stand'd, Cal													
N. Horn-Silv'r, Ut													
Pri'nt'l & Mil'r, Nev			.18	.17	.16								1,100
Phœnix													
Potosi, Nev													
Rappahann'k, Va			.18		.15		.17	.14	.17	.15	.15		6,400
Red Eleph't, Colo			.05								.06	.05	2,400
" 2 and 3													
Silver Cliff, Colo							.19	.18			.19	.18	500
Silver Hill													
Sonora Con., Mex													
Stanislaus, Cal	2.55	2.30	2.20						2.10				500
State L'e, 1&4, Nev													
" Nos. 2 & 3, Nev			.03										1,000
Sutro Tunnel, Nev	.21	.18	.20	.18	.20	.19	.21	.20	.23	.21	.24	.22	56,400
Taylor Plumas, Cal							.11				.10		2,000
Tioga, Cal													
Unadilla, Colo													
Union Cons., Nev	4.85								4.80				240
Utah Cent													

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 28.		Jan. 29.		Jan. 31.		Feb. 1.		Feb 2.		Feb. 3.		SALES.
Amie													
Allouez	2.00		2.13		2.00		2.00		2.00				900
Atlantic													
Bodie													
Bonanza D	1.75	1.62	1.62		1.62		1.62		1.62	1.50	1.50		2,240
Boston & Montana													
Breece													
Bulwer													
Calumet & Hecla	209	208¾			210								35
Catalpa	.35				.32½		.32½		.32½		.32	.30	1,700
Central													
Con. Virginia													
Dunkin	.35		.35		.36	.35	.35		.35		.34		2,150
Eureka													
Franklin			12.62	12.00	12.50		12.75		12.50	12.25			725
Freeland													
Grand Prize													
Honorine													
Kearsarge													
Osceola	20.00		20.50		22.00	21.50	22.00		22.00		22.00		355
Pewabic													
Quincy	52.00		54.00		53.00		54.00				52.00		43
Robinson													
Security													
Silver King											7.00		50
Standard													
Stormont	.12						.12		.12		.12		900

NAME OF COMPANY.	Jan. 28.		Jan. 29.		Jan. 31.		Feb. 1.		Feb. 2.		Feb. 3.		SALES.
Alma													
Arnold							.40						200
Aztec													
Bijou													
Blue Ridge	.20		.21		.20		.22		.20		.21		1,800
Bowman Silver	.10		.10		.09		.09		.08		.09	.08	2,500
Cliff													
Con. Pacific													
Copper Falls													
Crescent	.13		.14		.13						.12¼	.10	1,800
Cusi	.45		.45										900
Gem													
Humboldt													
Huron							2.00						100
Mesnard													
Napa									1.00		1.00		500
Ora													
Oriental & Miller									.18		.19		700
Plato													
Ridge													
Pontiac													
Rappahannock													
South Side													
St. Mary's													
Sutro Tunnel													
Tamarack			94								20½		200
Ute											95		15

New York: Dividend shares sold, 13,075. Non-dividend shares sold, 100,930. Total New York, 114,005.
Boston: Dividend shares sold, 9,098. Non-dividend shares sold, 8,715. Total Boston, 17,813.

COAL STOCKS.

NAME OF COMPANY.	Par value of shares.	Jan. 29.		Jan. 31.		Feb. 1.		Feb. 2.		Feb. 3.		Feb. 4.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal														
Cameron Coal	50	47¾	46¾	48	46¾	46½	45	48¼	46	48	47¼	48⅜	48	5,935
Col., C. & I	100	36⅝	36	36½	35¾	36¼	35½	37½	36¾	37	35¾	37½	37	8,200
Ches. & O. RR	100					8½				8				900
Chicago & Indiana Coal						23								
Consol. Coal	100													100
Cumb. C. & I	100													
Del. & H. C	100	102⅝	102¼	102⅜	101⅝	101¾	100¾	102⅝	101½	101¾	101⅜	102⅛	101¾	60,147
D., L. & W. RR	50	135⅜	134¾	135⅛	133⅝	133⅝	131¾	134¼	132	134⅛	132¾	134⅝	133⅜	176,820
Elk Lick Coal Co														
Hocking Valley	100	36¼	36	36	35	35¼	34	36	35¼	35	34⅞	36¼	35¼	8,475
Lehigh C. & N.†	50	51	50¾			50		50⅝						123
Lehigh Valley RR.†	50	56½		56½	56¼	56¼	56	56¼						251
L. & W. C. & I. Co														
Maryland Coal	100			14								14		200
Montauk Coal	100													
Morris & Essex	50			140				140½						105
New Central Coal	100					13½								10
N. J. C. RR	100	67	66¼	66⅝	64⅜	65⅝	63⅛	66	65	65⅞	65	66⅞	66	56,914
N. Y. & S. Coal	50													
N. Y., Susq. & Western	100	11¾		11¼		11⅜	11	11½	11¼	11¾	11⅝			2,424
Do. pref	100	33		32½		32	31	32	31½	32		32⅞		1,960
N. Y. & Perry C. & I	100	70⅛						70¼	70⅛	70¼	70	70⅝	69¾	2,430
Norfolk & Western R R	100	18⅞	18¾	19¼		18¼	17¾			18	17½	18		1,470
Do. pref	100	46¾	45	47⅛	45⅞	45⅝	5	46¼	45	45¼	43	45⅛	44	22,070
Penn. Coal	50					276								100
Penn. RR.†	50	55¼	55	55	54⅞	54⅝	54⅛							6,950
Ph. & R. RR.*	50	38⅜	37¾	38¼	36¾	36¼	34	36⅜	35½	36	35	36¼	35¼	313,557
Spring Mountain	50													
Tennessee C. & I. Co	100	49	48¾	48¼	45½	46	45	47	46¼	47¼	47	47	46	2,956
Westmoreland Coal†	50													

* Of the sales of this stock, 40,422 were in Philadelphia, and 273,135 in New York.
† The quotations for these stocks are not percentage, but actual price.

Total sales, 672,097.

San Francisco Mining Stock Quotations.

NAME OF COMPANY.	CLOSING QUOTATIONS. Jan. 28.	Jan. 29.	Jan. 31.	Feb. 1.	Feb. 2.	Feb. 3.
Albion						
Alpha						
Alta	1.62½		1.25	1.62½	1.50	1.62½
Argenta						
Bechtel						
Belcher						
Belle Isle						
Best & Belcher	10.00		9.00	8.87½	9.37½	9.75
Bodie	2.12½		2.00	2.00	1.75	2.00
Bulwer	1.00		1.00	1.00	1.00	
Con. Cal. & Va	22.25		21.00	20.50	22.50	21.00
Con. Pacific	.30		.30		.30	
Crown Point	4.50		3.75	3.00	3.50	3.87½
Eureka Cons	5.50		5.00		5.37½	
Gould & Curry	5.62½		4.50	4.62½	5.00	5.00
Grand Prize						
Hale & Norcross	8.00		6.50	5.87½	6.00	5.37½
Martin White						
Mexican	6.75		5.50	5.37½	5.87½	6.62½
Mono	2.37½		2.12½	2.25	2.12½	2.50
Mount Diablo					3.50	3.50
Navajo	.60		.55	.55	.55	.55
Northern Belle						
North Belle Isle						
Ophir	13.00		10.50	10.50	12⅜	12.25
Potosi	8.87½		7 87½	8.25	7.25	8.75
Savage	7.25		6.37½	6.37½	6.25	6.12½
Scorpion						
Sierra Nevada	5.25		4.50	4.25	4.50	4.75
Sutro Tunnel						
Tip-Top						
Union Cons	4.75		3.87½	3.75	4.25	4.25
Utah	6.25		4.75	5.00	4.75	6.00
Yellow Jacket	5.25		4.37½	4.25	4.12½	5.00

the 3d inst., to devise means to get something out of their investment. A man named Sheridan came to St. Louis from Silver City, New Mexico, a year ago. He had a silver mine for sale, and after four prominent St. Louis capitalists had the ore assayed and the mine inspected, they concluded to take it. A company was organized, and 200,000 shares of stock were issued at a par value of $10 a share. Sheridan was given 60,000 shares of stock for the mine, and 140,000 shares were sold in St. Louis for $1, $2, $3, and some for $5 and $7 a share. Sheridan was made superintendent of the mine, but quickly sold his stock and disappeared. The St. Louis syndicate then took hold of it, bought machinery worth $50,000, sold the stock all summer, promising that it was a bonanza. Servant girls, seamstresses, coachmen, and laborers invested their savings at top prices. The mill proved the mine to be worthless, and in a few weeks the stocks fell from $7.50 a share to 15 cents. The collapse was disastrous to the poor people of this city. Nothing definite has yet been decided upon.

COMPANY.	Location.	Bid.	Asked.
Adams, s.L	Colo.	$2.00	$2.25
Bi-Metallic, s	Mont.	.....	.....
Cen. Continental, G. s.	Ark.	.....	.....
Cleveland	.....	.....	.....
Consolidated Silver, s.	Mo.	.....	.....
Courtland	Colo.	.25	.40
Dandy, s	Colo.	.....	.....
Durango, T	Mex.	.....	.....
Grand Duke	Colo.	.....	.....
Granite Mountain, s.	Mont.	65.00	67.50
Hope, s	Mont.	*4.75	*4.85
Ideal, s. L	Colo.	.45	.47½
Iron Gold and Silver	N. Mex	.....	.07½
Laclede	N. Mex.	.....	.07½
Peacock	N. Mex.	1.75	2.00
Puritan	Colo.	.....	.25
Quincy	Colo.	.....	.05
Sheridan	N. M.	.15	.17½
Small Hopes Cons., s. L.	Colo.	8.25	8.50
St. Louis & Mex. Imp.	Mex	1.45	1.50
St. Louis & San Fran.	Mex.	.....	.....
St. Louis & Sonora, G. s.	Mex.	.....	.20
St. Louis & St. Elmo.	Colo.	.....	.45
St. Louis & Yavapai	Ariz	.85	.90
West Granite, s	Mont.	.....	.....

* New stock. Par value, $10.

Pittsburg Stock Quotations.

Feb. 2.

COMPANY.	H.	L.	Closing
Alleghany Heating Company	.....	.....	.....
Bridgewater Gas Company	$120	$120	$120
Chartiers Block Coal Company	40	40	40
Chartiers Valley Gas Company	94½	94	94
Forest Oil Company	105	100	105
Hazelwood Oil Company	48	47½	47⅛
La Noira Mining Company	.....	.....	.....
Natural Gas Company of West Va	.....	.....	.....
New York & Clevela'd Gas Coal Co	.....	.....	.....
Philadelphia Company	56½	55⅛	56⅛
Pennsylvania Gas Company	.....	.....	.....
Silverton Mining Company	.....	.....	.....
Westinghouse Air-Brake Co	99	98½	99
Westinghouse Electric Company	100	98	100
Wheeling Natural Gas Company	66	*48	*48
Yankee Girl Mining Company	.....	.....	.....

Highest and lowest prices during the week.
* New stock.

Boston Copper and Silver Stocks.

[From our Special Correspondent.]

BOSTON, Feb. 3.

The market for copper stocks has ruled extremely dull the past week; but there is a firmer tone and less disposition to sell stocks than noticed last week. The belief in a better market is gaining ground, and good stocks are picked up by those whose confidence in them has not been disturbed by the action of the big monopoly in selling its ingot copper below current prices. It is believed that higher rates will be established, as the stock of ingot is not unusually large, and that no further large amount will come on the market at present prices. Calumet & Hecla recovered to $210, with only small sales. Quincy advanced to $54, after selling down to $52. Franklin declined to $12, but rallied to $12½, and is undoubtedly the cheapest stock for its prospects of any in the market. Osceola rallied from $20@$22, and, for this stock, was quite active. A small lot of Tamarack sold at $94, a decline of $1 from last week. Allouez sold at $2, same as last week. The remainder of the list was neglected, and, for the present, it is not probable there will be any special activity in the low-priced mines; but if any can be picked up at low prices, they will no doubt show a good profit before the year expires. Total sales of copper stocks for the week, only 1026 shares.

In silver stocks, dullness prevails, with drooping prices. Bonanza declined to $1⅛. Catalpa, to 30c. Crescent, to 10c. Dunkin sold at 35c. Cusi, at 45c. Bowman, at 8c.

At the Mining Exchange, there is but little doing outside of two or three specialties, and prices do not differ materially from quotations at the regular Stock Exchange. The advance in the new stocks recently listed and quoted is largely due to manipulation, and does not inspire a great degree of confidence.

Gogebic Iron Stocks.

[From our Special Correspondent.]

Nothing especially new has transpired on the Gogebic Range during the past week. Additional routine work is done on all the properties; and prices have all been very firm with some marked advances, particularly in the Iron King, Kakagon, Anvil, Nimikon, Atlantic, and Valley.

The stock-piles at the different mines are increasing in size very rapidly, and by the opening of lake navigation there will be several hundred thousand tons ready for shipment.

Many new investors are on the range, and negotiations are pending for the sale of several mines that are liable to be consummated soon.

The demand for the various stocks is increasing, and the prices may be expected to advance in the near future, while this boom lasts. A great deal of discretion should be exercised in dealings, and when the investment is important, an examination of the mines should be made by disinterested experts.

Pipe Line Certificates.

Messrs. Watson & Gibson, petroleum brokers, No. 49 Broadway, report as follows for the week:

The oil market has ruled lower this week, owing to the increasing production of Riebold in Butler County, and the fear of Lima, Ohio. Two years ago, a well was begun on the outskirts of this city by the president of the Lima National Bank, Mr. B. C. Faurot, to get water or gas for his paper mill. To his surprise, he found some oil, but later exploitation showed that he was barely on the edge of the prolific territory, which, like the Pennsylvania deposits, appears to have a northeast by southwest trend, known as the 45 degree line.

In September, 1885, a company of citizens joined to sink another test well, which, in November, struck it richer than the first well. This attracted the attention of two oil men from Olean, New York, Messrs. Mandeville and Ernst, who made a purchase of 70 acres of land, conditional on finding a good producing well on the ground. They succeeded, and the real industrial development of Lima dates from this third venture, or say February one year ago.

Since that time, about 250 wells have been drilled, and the present production is between 5000 and 6000 barrels, with a territory of eleven miles in length and three miles in width, known to be practically prolific, but only slightly developed. Of course, some barren spots are found in this area, but no apparent break in its oil deposit. To the southeast at St. Mary's, say, about 25 miles, oil is found; to the northeast 35 miles, is the large natural gas development at Findlay; and about 13 miles north of Findlay, at North Baltimore, a good producing well was opened about ten days ago, at say 500 barrels a day.

A small refinery, with a short pipe line, was started last spring by a few public-spirited citizens. Its capacity was about 100 barrels daily, but it demonstrated, as did numerous tests in New York, Philadelphia, Cleveland, etc., that this Ohio crude was capable of yielding a water-white, high-test, non-odorous kerosene.

The geographical location of Lima and its railroad facilities are excellent, as it is on the Cincinnati, Hamilton & Dayton, Chicago & Atlantic, Pittsburg & Fort Wayne, and Erie & Western, being only two and a half hours from Toledo, four hours from Cincinnati, and six hours from Chicago, and the wells are on the outskirts of the town, the oil costing very little for pipage.

Oil well supply companies and drillers from Pennsylvania are already on the ground, and, from all that we can learn, there will be an influx of people here in the early spring, and a general activity of development.

The oil at Lima is found at a depth of about 1300 feet, taking about 60 days to drill a well, costing about $2500. Bradford gets its oil at a depth of about 1700 feet, and Washington say 2400 feet.

The public are entirely out of the market, and are likely to remain so until prices seek a still lower level.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange:

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 29	70⅛c.	70⅛c.	70c.	70¼c.	958,000
31	70	70¼	69½	69⅝	1,598,000
Feb. 1	69	69⅛	67⅝	68⅝	3,153,000
2	67¾	68¼	66⅞	67⅛	3,508,000
3	67⅞	67¾	66⅞	67¼	2,714,000
4	66⅞	67½	66¾	66¾	1,685,000
Total sales in barrels					13,616,000

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